APRIL.

THE

FIELD NATURALIST:

A REVIEW

OF

ANIMALS, PLANTS, MINERALS, THE STRUCTURE OF THE EARTH, AND APPEARANCES OF THE SKY.

EDITED

BY JAMES RENNIE, M.A., A.L.S.,

PROFESSOR OF ZOOLOGY, KING'S COLLEGE, LONDON, AND AUTHOR OF INSECT ARCHITECTURE, ALPHABET OF BOTANY, &c. &c.

LONDON:

ORR & SMITH, 14, PATERNOSTER ROW;

W. & R. CHAMBERS, EDINBURGH; AND W. CURRY, JUN. & CO., DUBLIN.

1834.

[PRICE ONE SHILLING AND SIXPENCE.]

CONTENTS.

PAGE

The Wood Chat (from Le Vaillant's Birds) 165

On the Wood Chat. By H. M. D. 167

Retrospective Remarks. By Edward Blyth 170

On Sagacity and Instinct. By T. C. 175

Notes from Gravesend. By Ornithologus 179

On the total and partial Extermination of Animals. By James Fennell . . 182

Hints for Collecting Water Birds. By C. Parsons, Esq. 197

Amazon Ant (*Formica rufescens*, Latreille). By the Editor 203

Notes upon Insects. By Sylvanus 208

The Editor's Alphabet of Insects 210

Chapter of Varieties—

Of what use are the Aigrettes of certain Owls?—Habits of the Tawny Wood-Owl, or Screech-Owl—Winter Birds—Mode of catching small Birds—Habits of Swallows previous to Migration—Oaks growing in Hyacinth Glasses—Dr. Knox on the Structure of the Foot of the Horse—Daily Flight of Rooks (*C. frugilegus*)—Observations on the Willow Wren (*S. trochilus*), and other Birds—The Starling—On Cats—Lady Birds 213—220

THE WOOD CHAT (Linius Rufus)

G. E. Madeley lith. 5 Wellington St. Strand

THE

FIELD NATURALIST.

THE WOOD CHAT (*From Le Vaillant's Birds*).

La Pie-griesche rousse, *Le Vaill.*, Ois. d'Afriq. ii. p. 46, pl. 63, fig. 1 and 2, *Buf.*, i. p. 301, pl. enl. 9 male, 31 female; *Bechst.* Deutsch., ii. p. 387, l. 15; Lanius rutilus, *Lath.*, Ind. Orn. i. p. 70; *Shaw*, Zool. vii. p. 316; Lanius rufus, *Briss.*, ii. p. 147; *Id.*, 8vo. i. p. 199; *Gm.*, *Lin.*, i. 301, 12, &c.; *Tem.*, Man. d'Ornith. p. 62; *Id.*, ed. ii. p. 147; Lanius pomeranus, Mus. Carls., Fasc., i. l. 1; *Gmel.*, *Lin.*, i. 302; Lanius minor cineraseeus, *Raii*, 19, A. 6; *Will.*, 54, § iv. l. 10, f. 2. (?); *Klein*, p. 54; *Frisch.*, C. l. M. & F.; Bor. Nat., ii. p. 84; Lanius minor rutilus, *Klein*, p. 53; *Id.* Ov., l. 5, f. 7; *Gerin.*, i. l. 56; Ampelis dorso griseo, &c., Faun. Suec. Ed. i. p. 180, f. 2, fem.; *Kramer*, p. 363; Dorndreher, Gunth. Nesl. U. Ey., l. 41 (?); Kleiner rother Neuntodter, *Naturf.*, 8. s. 69, 39; Buferola, Ferlotta bianca, *Zinn.* Ov, 89, l. 15, f. 59; Another sort of butcher-bird, *Will.*, Engl. p. 89, s. 4; Wood-chat, *Lath.*, Gen. Syn. i. p. 169; *Id.* Sup., ii. p. 70; Br. Zool., i. No. 73; *Ib.* fol., 74. l. C. 1; *Id.* ed. 1812, p. 277; *Albin.*, ii. pl. 16; *Bewick*, i. p. 61; *Lewin*, Birds, i. l. 32; *Pult.*, Cat. Dors. p. 4; *Don*, Br. Birds, 4, l. 84; Wood-shrike, *Flem.*, Br. Anim. p. 63; *Montagu*, Orn. Dict. (Rennie's edit.) p. 566; Wood-chat shrike, *Lath.*, Gen. Hist. ii. p. 14. Pie-griesche rousse du Senega, pl. enl. 477, 2; *Lath.*, Gen. Syn. i. 170. 17 A.

THIS bird, both from its carriage, attitude, and manners, as well as whole conformation, unquestionably belongs to the genus of Butcher-bird, properly so called, and enters into the first of the three sections which I consider myself obliged, for the sake of distinction, to establish in the family of butcher-birds. It is found not only in Europe, but inhabits a considerable portion of Africa; since I obtained it in the inland districts of the Cape of Good Hope, and Adanson found it in Senegal. I shall not take up much time in my description of this species, as its manner of living at the Cape is precisely the same as in Europe, and as it has not sustained any variation in colour or stature.

I refer my reader, therefore, to the descriptions published by ornithologists, and particularly to that of Brisson, who has given a most accurate and detailed account. The reader, by consulting the plates in this work, representing a male and a young one of this species, which I brought from the Cape of Good Hope, and by comparing them, either with Buffon's portraits of the same species, killed in Europe*, or, which will be more advantageous still, with similar birds, found in almost every collection, may be convinced, that the species has not, in reality, experienced the slightest change at the Cape. There is, also, in my cabinet, a male wood-chat, brought from Senegal; and I can positively declare, that the slightest difference is not observable between the three individuals, although they were killed in countries so remotely situated in respect to each other.

Buffon pretends that butcher-birds are passengers in Europe,—that they regularly depart in autumn, and return in spring. I shall not confidently assert the contrary,—but maintain that such has not generally taken place in the cantons of France; for most true is it that during winter I have killed wood-chats in Lorraine, and have constantly noticed butcher-birds at the Cape, in those months in which Buffon supposes they return to France for the purpose of breeding.

Besides, if it could be proved that wood-chats retire from certain districts of France to visit and inhabit warmer temperatures, would it not be absurd to imagine that they consequently traverse in their migrations such an immense tract of land as that which separates Europe from the southern point of Africa, where this bird is likewise found? In examining my journals, moreover, I perceive that I killed some of these birds in all seasons of the year in Africa,—and in Europe I did as at the Cape. Their travels do not appear, then, to extend to any considerable distance. I have observed on many occasions, too, that in general these butcher-birds constantly frequent the same cantons; and if one of these birds, whether the grey butcher-bird, the wood-chat, or the flusher (*Lanius Collurio*), has been noticed in any place whatever, it will most certainly be seen there daily, unless it apprehend danger from the sportsman, or be alarmed by too hot pursuit. They have that suspicious disposition which is common to nearly all birds of prey, and that habitude of appropriating to themselves a domain exclusively for their own predatory excursions, the deposition of their eggs, and select habitation.

---

* See Buff., pl. enl. No. 9, f. 2, le mâle; and No. 31, f. 1, la female.

It is useless, I presume, to combat Buffon's idea, that the wood-chat and the flusher might with propriety form one and the same species. According to similar principles he pretends that all foreign butcher-birds, which have red in their plumage, are merely varieties of the same species. How are these notions to be reconciled with the changes which he imagines birds unceasingly undergo, in the different climates which they inhabit; and why should the red only be free from change?

The male wood-chat is rather larger than the female; the latter is easily distinguished by the absence of that deep red colour on the head and behind the neck, which is the peculiar attribute of the male.

In its young age this bird is so different from its appearance at a later period, that, in this state, it has been described by many ornithologists as a mere variety of the flusher,—an error into which Brisson has been led by Aldrovand, who first mentioned this bird without having any knowledge of it; see Brisson's Ornithology (ii. p. 154), who likewise describes this variety of age, under the name of the variegated red-backed shrike (*L'écorcheur varié*), avowing his uncertainty whether it was not the female of the flusher. I refer the reader for other particulars to figure 2 of plate 64 (*Oiseaux d'Afrique*), in which this bird is represented, and which is beyond all question a wood-chat in its first young age, and not a variety of the flusher. I am certain on this point, having examined and pursued, both in Africa and Europe, more than twenty broods of this species, and having reared several young ones.

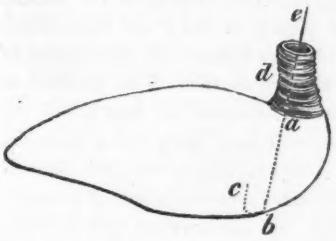
ON THE WOOD-CHAT.

BY H. M. D.

Your correspondent A. T. makes mention of his having shot a female wood-chat (*Lanius rufus*, as described by Bewick), which was in company with a male red-backed shrike (*Lanius Collurio*), and also of his never having been able to meet with the male wood-chat nor the female red-backed shrike, which confirms my opinion that Bewick has mistaken either the female or the young of *L. Collurio* for the female *L. rufus*; but I rather think it to be the latter. Indeed, I feel very much mistaken if (*L. rufus*) is a native of Britain at all. However, I should feel very much obliged to any of your correspondents if they could point out any instance of the male bird being seen in this

country; if not, I shall consider it as a foreigner, and not to be a variety of the red-backed shrike, as some naturalists have supposed it to be, an error which I can easily prove; for being abroad this last summer, where wood-chats are in great abundance, I had both the opportunity of finding their nests and of shooting both the old birds and the young, all of which I found differing greatly from the red-backed shrikes, in every respect. I had also the opportunity of watching their habits, and found them to be very shy, much more so than the red-backed shrike; and, like the ash-coloured shrike (*L. Excubitor*), keeping watch upon the end of a decayed twig, or upon the tiptop of a tree, and keeping a good look-out upon their pursuer, whom they seldom allow to get within gun-shot. The female differs little from the male; her colours are more dingy, and the patch of chestnut on the back of the head is not quite so bright, and her breast is a great deal more marked with wavy lines (more or less, according to age), but never totally disappearing, as in that of the male. I here take the liberty of sending you a sketch of a male bird, which I shot in April last at Geneva. I have in my possession at present the male, female, and young of *L. Collurio:* the young bird is precisely the same as that described by Bewick under the title of the Wood-Chat, and in general appearance differs little from the adult female; yet, on looking at them closely, one can observe that each feather, on all the upper parts, is fringed with dirty-white, which gives it the appearance of being larger than the old bird, which might probably have led to its being mistaken for another species. I decidedly agree with your very able correspondent Mr. Blyth, that it is absolutely necessary, in collecting birds for SCIENCE, and not for the paltry motive of placing them in cabinets to please the eye, that one should collect different specimens in their different liveries, according to their age and the season of the year; a plan which I have no doubt, if universally followed, would prevent our so frequently meeting with so many doubtful species as we find amongst the families of the falco, picæ, tringa, colymbi, mergi, and most of our sea birds. Mr. Blyth, in his description of preserving birds, mentions, that on mounting the skin of a bird, the general fault of bird-stuffers consists in the filling of it out with a great deal too much tow or other stuffing, especially about the neck; but there is a very simple plan of obviating that, in the following manner, by stuffing the bird with cork, which is more durable, and less likely to be attacked by moths or other insects than anything used. After the body is stripped of its skin, procure a piece of cork of sufficient size; and hav-

ing measured the body with a pair of semicircular compasses, cut the cork nearly to the proper dimensions; then take a rasp, and having removed all the unevenness occasioned by the knife, so as to make the artificial body exactly of the same size as the real one, insert a wire



at the shoulder (*a*), and bring it out at the breast (*b*), and bend the end into the cork (*c*), so as to make it steady; then apply the compasses to the neck, and having measured it, take some tow (*d*) and twist it round the wire (*e*) till it is exactly the proper size; so that no difficulty will be found in the stuffing, and the sewing may be drawn quite tight, without any danger of destroying the shape and proportion of the bird. Should the cork be found not to be thick enough, place one piece above the other, and drive a small wooden peg in at each end, and proceed as before. Although it is hinted by T. C. that the young of the starling may be the solitary thrush (*Turdus solitarius*), perhaps he is not aware that its plumage is tinged with blue, and in France goes by the name of *Le merle solitaire, ou bleu.*

I had almost forgot to mention, that when stuffing a bird with cork, the precaution should be taken to damp the skin well with wet tow, in case it should become too dry.

A friend of mine informs me, that while taking a walk on Sunday the 12th, which was remarkably close for the season of the year, he was very much surprised at seeing (between the hours of three and four in the afternoon) quantities of midges and small flies, which were dancing about in their aerial sports, though frequently annoyed every now and then by the appearance of their great enemy the bat, who seemed to be making a luxuriant feast, flying and darting about as if it had been the middle of summer; a circumstance which perhaps you may think worthy of a place in "*The Field Naturalist.*"

January 14*th*, 1834.

RETROSPECTIVE REMARKS.

BY EDWARD BLYTH.

From a comparison of the original coloured drawing of the cuckoo (or rather *Coccyzus*), mentioned at page 7 of the *Field Naturalist's Magazine* for January, 1833, with Wilson's figures and descriptions of the *Coccyzus carolinensis* and *C. erythropthalmus*, I am inclined to dissent from the opinion expressed by Mr. Fennell (at page 61 of the present volume), that Mr. Ball's bird will most likely prove identical with one of these American species. I entirely concur with Mr. Fennell in placing but little dependence on coloured representations of animals, as they are but too generally executed; but the drawing now in question bears such evident marks of the most scrupulous accuracy, that I hesitate not to assert, judging from it alone, that the species which it represents is distinct from either the *C. erythropthalmus* or *C. carolinensis*. In size and general proportions it approximates more to the former, but differs, in being about an inch shorter, in the very dissimilar *colour* of the bill, and in wanting the characteristic space of bare wrinkled skin, of a deep red colour, which encircles the eye of the American bird. From *C. carolinensis* it differs, in the much smaller comparative *size* of the bill (in this resembling *C. erythropthalmus*), in being about two inches shorter, and in the different colour of the whole under parts, which in the Carolina coccyzus are pure white. Various minor diversities might also be mentioned; but after stating the above, I conceive it hardly necessary to describe them, as the differences just related, I think, are sufficient to show that this is a distinct species. Indeed, it is far from being likely that so many specimens of an American bird, possessing no greater powers of flight than the common cuckoo of this country, should have been met with east of the Atlantic; to me it appears more probable, that, when the natural productions of the interior of Barbary, at present but very partially known, shall have fallen more under the observation of Europeans, this coccyzus will be found to range, perhaps extensively, in that vast but almost unexamined region. It is remarkable that no mention is made of this bird in the late edition of Mr. Selby's work.

Since writing the notice to which Mr. Fennell refers (page 65), of the brilliant night-shining eyes of certain moths, I have observed this phenomenon in a great variety of instances. It can never be observed when the moth is quite at rest; but when flying, or when about to fly,

the appearance is, at times, extremely beautiful. The fact, however, I find, is familiar to most entomologists. though perhaps it may be novel to many who, like myself, have hitherto conducted their entomological researches chiefly in the day time. That it should be observable in *Plusia gamma* and its congeners is, I think, rather singular, as these insects fly very much by day, and in the brightest sunshine.

Your correspondent T. C. (page 70), has favoured you with some remarks on the supposed torpidity of swallows. I was so fortunate last November as to succeed in tracing one of these torpidity reports to its foundation. First I heard that several swallows had been found by the workmen, when repairing some part of Streatham Church, Surrey; of course I was all animation, and inquired of my informant, "who told him so?" He referred me to another man, who said, "Some swallows had certainly been found there," and gave me his authority for so saying. I inquired again, and again, and again, and at last I discovered the actual truth—that two dead swifts, in a skeleton state, had been found in a hole in the steeple! So much for the torpidity of swallows, and for an account of several swallows being found in the steeple of Streatham Church. I am not aware of any author who has mentioned the fact, that the common swallow (*H. rustica*) sometimes builds in the hole of a tree: a season or two ago, as I was walking by a row of lofty elms at Sydenham, Surrey, I observed a boy descending one of them with a bird's nest, which, to my surprise, contained three young swallows, that he had just taken from a hole in the tree. This, no doubt, is the original and natural situation for a swallow to construct its nest in; although in a country like England, where more convenient situations abound, it may but very rarely be known to select a hollow tree for this purpose.

I have a few observations to offer on T. C.'s "Notes on Birds." The habit of the goldfinch, of placing its two feet upon its food (an almond or piece of apple, for instance), and pecking it while held firm in that situation, in the manner (as T. C. justly observes) of a genuine *Parus*, is, I believe, among the *Fringillidæ*, peculiar to the crossbills (*Loxia*), and to the genus *Carduelis*. I have noticed it in the American goldfinch, and in the common siskin of this country (*C. spinus*); but none of the linnets do so, not even the common redpole, which in many respects so closely resembles the siskin. If a piece of almond be given to the redpole, it will take it up in its bill, nibble off a small portion, and lay the remainder gently on the perch beside it, but it has not the least notion of holding it between its feet.

The great variations in the plumage of the common starling are governed by fixed laws, and quite uninfluenced by season. The bill of the male does not acquire its yellow colour till about six months after its first moult; that of the female, I think, not until the second or third year. I have shot both male and female starlings with yellow bills, at all seasons of the year. Great numbers are always brought into the London markets during the months of January and February, where they may be procured in almost every state of plumage; some beautifully glossed, with hardly a spot on the under parts; others speckled all the way down; some with yellow bills, others without. The females are most readily distinguished by the invariably larger size of the spots upon the belly.

T. C. is evidently unacquainted with the true greater redpole, which is a very different species from the common linnet, either in its summer or winter dress. It appears to be a rare bird in collections; and though it visits us occasionally in considerable flocks, yet its appearance is very uncertain, many years sometimes elapsing between its visits. Such is the case at present. About six years ago, the London bird-catchers took vast numbers of greater redpoles,—but since that time I have not been able to procure a single specimen, though the common species has been abundant. I learned that half a dozen of them were taken last winter in the neighbourhood of Croydon; and this is the only instance of their capture which has come to my knowledge since the season in which they so abounded. The common red-pole and the twite are in these parts extremely regular in their appearance, and the linnet is more or less plentiful with us throughout the year. The greater redpole very closely resembles the common species in form, and in the markings of its plumage; but is considerably larger, exceeding the twite in size, and the feathers on the back are margined with dull white, or stone colour, whence it is termed by the bird-dealers the *stone redpole*, in contradistinction to the common species. Mr. Selby is consequently mistaken in applying this name to the common or lesser red-pole linnet (*Linaria pusilla; Fringilla linaria*, Auct.).

The only distinct notice of this bird which I can find in the works of the various British authors which I have consulted, is contained in a note affixed by Mr. Selby to his description of the lesser redpole. "A large variety of this species," says that gentleman, "is noticed by Temminck, and which is sometimes met with in this country. * * * * * In size it nearly equals the common linnet, but the markings and colour are those of the lesser redpole." To this he adds, in the edition of

1833,—"I am now inclined to think that these birds will not be of a distinct species, but only extra-sized specimens of the female of *Lin. minor*." Having myself examined a considerable number of greater red-poles, both British and from the neighbourhood of Lake Ontario, I feel no hesitation in saying that they are a distinct species. I have seen them in every state of plumage which is observable in the common red-pole; both males and females,—some of the former having beautiful red breasts; I have invariably observed the whitish or stone colour edgings on the plumage of the upper parts, which give them a characteristic appearance, quite different from that of the common red-pole; and, lastly, I have never noticed any remarkable variation of size, nor other approximation to the common species, which, were it a mere variety, we might reasonably expect to find. In its wild state, I am informed by the bird-catchers that it associates much with the gold-finch. Its song I am unacquainted with, — but its usual call-note resembles that of the lesser red-pole.

Before quitting this subject, let me guard the inquirer against a very common source of error, by means of which many naturalists have been misled. The greater red-pole, being generally a rare bird, is unknown to a great many dealers, who, when asked for a stone red-pole, will often endeavour to sell a fine male of the common species under that name, thereby causing the purchaser, naturally enough, to suppose the two species to be identical. From this practice it probably came to pass that in all our works on British ornithology the provincial name *titlark* is affixed to the *Anthus pratensis*, instead of to the *A. arboreus*; the former species being universally known to dealers and others, in every state of plumage, by the name *pipit lark*. The common red-pole is thus often fraudulently sold under the name of *stone red-pole*, which probably occasioned Mr. Selby to say, in his description of the former, "that it is frequently taken by the bird-catchers, by whom it is called the *stone red-pole*." Those who know the genuine stone red-pole will be at no loss to recognise the appositeness of its provincial name.

Chaffinches of both sexes remain plentiful in this part of Surrey throughout the winter: the females congregate in large flocks, and frequent the open country; whilst the males mostly continue solitary, and are chiefly found in gardens, and other places in the immediate vicinity of houses.

A few black-caps, babillards, sedge-warblers, grey-flycatchers, and wry-necks, usually linger in the south of England until the last week

in September; but being at this season mute, they are but rarely noticed.

The adult cuckoos leave us about the last week in July or the first in August; the young of the year remain until about the middle of September, when they form into small flocks of six or seven, and migrate in society.

Your correspondents have favoured N. N. with two methods of establishing a rookery; by fixing some old nests on the trees on which they are wanted to build, and by placing rooks' eggs in the nest of the first magpie that builds in the desired locality,—which latter method appears to have been successful in three instances. I think I can suggest a third plan, though I am not aware that it has ever yet been tried. Suppose a nest of young rooks were to be brought up tame (and, like the rest of the *Corvidæ*, they are susceptible of great attachment to their owner); would they not select for nidification, on the ensuing spring, any trees of convenient size which grew nearest to the place where they were reared? They do not, however, *invariably* select high trees, and perhaps, under such circumstances, they might not. Some time since I observed a rookery in Warwickshire, some of the nests of which were not above ten feet from the ground.

It would appear from E. P.'s communication (page 109), that the bearded tit (*Calamophilus biarmicus*, Leach) is a migratory species in Cornwall. It is observed in most places to forsake its breeding place in the autumn, but does not leave the country, being found throughout the winter dispersed in small parties along the coasts of Suffolk, Essex, and Sussex, wherever a sufficient growth of reeds affords it a suitable locality. Many are brought to the London markets, during the winter, from the Essex marshes.

What species does E. P. intend by the name "blue bird?" The *Parus cæruleus?* Surely not the blue-grey or solitary rock-thrush (*Petrocincla cyanea*, Vigors)?

Allow me, in conclusion, to congratulate your readers, and the lovers of natural history in general, upon the many accessions made to the number of your correspondents, from all parts of the country. The number of field observers is evidently fast upon the increase, and will still continue to increase; and the more natural history is studied, the more and more popular it will become,—the prophecies of certain sagacious persons, who call it the mere rage of the day, and say that it will soon blow over, notwithstanding.

Tooting, Surrey, Feb. 14th, 1834.

ON SAGACITY AND INSTINCT.

BY T. C.

THE more I have considered the subject, the more I am inclined to believe that animals possess, when in a state of domestication, some degree of the *reasoning faculty*, or at any rate sagacity, which, if it do not amount to reason, is far superior to mere instinct.

Instinct is implanted in all animals *solely* to enable them to provide for their immediate wants, and it extends only so far as they themselves are concerned; it is given to all according to their necessity, to prevent their several species from becoming extinct, and all have instinct adapted to their natures. The worm which is cut to pieces by the spade of the husbandman, "the poor beetle which we tread upon," and all those which we consider the meanest of God's creatures, have as much instinct as the "cunning" fox and the "sagacious" elephant, because it extends only so far as their necessities: it teaches them to procure proper food for themselves and their young; to defend them from or elude the attacks of enemies; to construct their habitations of suitable materials, and in a manner adapted to their respective natures. It actuates the bird when it builds in some safe retreat, and gathers certain substances wherewith to construct its nest; when it flies from clime to clime, over vast tracts of land and over trackless seas; or when it darts from its nest, affecting lameness, to entice the intruder from its young to itself: it teaches some to retire to their roosting places when the sun sinks beneath the horizon, and others to sally out in quest of that prey which nature has destined to form their food; and it teaches the cuckoo to deposit her egg in the nest of a stranger, and the owner to nourish her young in preference to her own. But the cuckoo has no *reason* for acting as she does; she never attempted to build her own nest, or to feed her own young; she needs no trial nor experience; she does not consider whether the bird into whose nest she drops her egg will feed the young with food adapted to its nature, or whether it will be able to turn out its brethren and take possession of the nest; she needs no instruction, nor does she *reason* in any way, but, guided by a power to her far superior to reason, she seeks only those nests which nature has adapted for the reception of her eggs, and trusts her young only to those birds which will procure proper food for the nestling.

This is the principal difference between reason and instinct.

> "Reason serves when press'd,
> But honest instinct comes a volunteer."—POPE.

Instinct acts without consideration, without reflection or thought; it needs no instruction, nor experience, nor trial, but its impulses are mechanical, and its effects certain. Witness the bee; what can exceed the beauty and regularity of the honey-comb? What labour and reflection would it not have cost *man* to build it? It is formed in the best possible manner for strength and economy of room; but the architect acts without any plan or model; has no idea of what the fabric will be when completed, nor has it thought what will be the best method of forming it; but it has no idea of any other plan than that which it adopts, and acts without experience and without instruction, guided solely by instinct, thus in many instances superior to reason.

There is another wide difference between these faculties: as instinct requires no previous trial to insure its effects, but is implanted in all animals from the time of their birth, so it is susceptible of no improvement; domestication, on the contrary, impairs it; for inferior animals, as well as man, lose in some measure their powers of discerning what food is wholesome and what is not, and hence require medicine and artificial means to preserve their health. Man, in a savage state, has more *instinct*, but less *reason*, than when civilised; and domesticated animals have less *instinct*, but more of what is called *sagacity*, than when in a state of nature. Animals are the same now as they were a thousand years ago; they never desire to discover new kinds of food; nor do birds build with different materials, or improve in their architecture, or alter in any way, but feed as their parents fed, and build as their parents built, and have the same habits and manners as they had "in the beginning." But how is it with *rational* man? He is always inventing and *altering*, if not improving: his manners differ with every century, and almost every year; he is different in many respects now to what he was a hundred years ago; and the stately palaces of the present day bear no resemblance to the Indian's wigwam, or the hut of the Hottentot. Thus reason is ever varying, but instinct remains the same; and for this reason, as well as for many others, it is better adapted to the brute creation, because all have been made for some purpose; and if they changed their natures as man does, there would be an end to all order, and the laws of nature would be entirely subverted.

Instinct is always admirably adapted to the habits of the animals to which it has been given; and in examining the works of nature, and observing the action of this wonderful faculty, we cannot avoid being struck by the infinite wisdom and beneficence of the Creator; and though in some instances we may notice peculiarities, the reasons for which we cannot comprehend, we have no right to expect nature to conform to rules laid down by ourselves, and it is no reason because to our limited understandings habits which we observe are incomprehensible that such reasons do not exist; we have no right to question the wisdom of the great Creator, nor to imagine, because these peculiarities do not agree with our ideas of perfection, that it is an error on the part of the Maker of all.

But I have been led deeper into the mazes of this most interesting subject than I intended; and I shall now merely mention one or two facts in illustration of my first proposition, "that animals (*some* animals) possess, when in a state of domestication, some degree of the reasoning faculty."

I had, when a school-boy, a Newfoundland dog, which I was in the habit of taking out, twice a week (half-holidays); and he knew so well when those days came, that he would howl piteously, if by any occurrence he was not taken for his exercise: he was a great favourite, and a most "sagacious" animal.

A spaniel, with which I was acquainted, would always insist upon accompanying any member of his master's family who went out, and frequently when his company was anything but agreeable; but on Sunday he never attempted it, nor would he even think it worth while to rouse himself from before the fire.

Now, if I go too far in stating this to be direct *reason*, it is certainly not *instinct;* these dogs could not possibly know the interval between two periods, but must have known from other circumstances the days when they were to remain at home and when they might go out. Would *instinct* teach the horse to obey his master? or would an animal possessed of *mere instinct* show such evident traits of attachment and docility as the horse, the dog, and the elephant, not to quote the multitude of anecdotes which we have on record of the astonishing "*sagacity*" of these noble animals? Would instinct alone teach the shepherd's dog to scour the hills for miles around, and gather every stray sheep to the flock, or select his master's sheep from among any number of strangers? Instinct might instruct the dog to find his master, or

his master's home; it might teach the carrier pigeon to seek the spot where it was hatched, and where it had always been fed, but it would not teach this bird to carry a letter to a strange place and return with an answer; and if a pigeon were to do this, it would be something more than mere instinct. The cat, if removed to a vast distance from its home, will return; but the dog will find his master, and evince affection for *him*, and not for his house; and this is the difference between instinct and reason. In the first instance, the cat is only attached to her home, because there she has always found food and shelter; but the dog would not remain if his master left it, but would follow him; and instinct, I am convinced, is not the only faculty employed in this instance.

I knew a horse, which, if put into a *box* or shed by itself, would *open the latch*, and thus escape. Now, instinct would have taught him to kick at the door, and get out by violence, and not to effect his purpose by this deliberate and indirect manner; but he must have observed the effect previously, and employed, if not *reason*, a higher faculty than instinct.

Some of your readers may recollect the elephant which a few years since performed at the Adelphi Theatre, and, as far as I am a judge, showed as much talent and reason (or *sagacity*, or whatever else it may be called), as any of the other performers. Witness also Ducrow's horses; and I might relate numerous anecdotes of what is called "sagacity" in animals; but as they may be seen in almost every work upon the subject, as well as in the "Percy Anecdotes," I will not trespass further upon your time and pages, but refer your readers to the works mentioned; and in conclusion merely say, that there are, as I conceive, different grades of reason, from the most enlightened man to inferior animals; from the philosopher to the herdsman; from the white to the black (but here I speak *generally*, for we have many negroes who would shame the majority of Englishmen in literary attainments), and from the black to the savage; and I do not know in what respect the cannibal is superior to other animals: he possesses *instinct*, but no more, and perhaps not so much *reason* as the horse, the dog, or the elephant.

I have often wondered at the extraordinary though well-known habit of the cuckoo, of laying in the nests of other birds, but have never been able to account for it. Since writing the above, however, I have thought, as this bird no doubt lays several eggs, and as I know from

experience the young are very ravenous, that possibly *one* young one requires as much food as the parents could procure; they therefore provide a nurse for each, and hence the reason for the young cuckoo turning out all its companions, for it appears that this one charge is sufficient to occupy the whole care of its foster parents; and allowing this reasoning to be just, it will also account for the cuckoo's not *sitting upon even one egg;* for how could she build her nest, and hatch one egg, and at the same time provide for the hatching of the others?

NOTES FROM GRAVESEND.

BY ORNITHOLOGUS.

THE hybernaculum, or winter retreat of the swallow tribe, presents a question which naturalists, from Linnæus downwards, have been unable to solve. It appears to me that this arises in a great measure from the want of corresponding societies in different parts of the world, which would communicate to each other the exact periods of their departure and return, and thus eventually elicit the truth. This remark is founded on the assumption that they do actually migrate; but it will be, at the same time, advantageous to pay attention to all those circumstances connected with this remarkable genus that may transpire in our own country, as a careful collation of such facts, *nantes in gurgite vasto*, will contribute essentially to determine a point at once so mysterious and so interesting. Under this impression, I mention a circumstance which fell under my own observation, and which seems to favour the idea of their remaining torpid during the winter months. During the severe winter of 1830-31, a labourer, while threshing in a barn, had his attention drawn to a swallow which flew from one bay (as it is called) to the other. It flew so low that it almost touched him, and so feebly that he not only had sufficient time to determine its species, but nearly succeeded in knocking it down with his flail. It, however, managed to reach the top of the corn on the opposite side, and did not again appear. Here we have a strong instance, as I before observed, in favour of their torpidity, as, even admitting this to have been a young bird hatched late in the summer, it must have existed for some months in a state of inactivity, from which it only emerged for a short time when disturbed by some accidental circumstance. I have

frequently questioned the labourer (who is an intelligent man) as to whether it might not have been a bat; but he persists in maintaining his opinion, and declares he could not by possibility have been mistaken. Your correspondent T. C. seems to ridicule the idea that birds could exist in this state for so long a period. What does he think of that theory which supposes that they remain under water during the winter, and which, absurd as it is, has met with more than one advocate? Notwithstanding the foregoing case, however, I am bound, as an impartial observer, to notice some of the arguments in favour of migration, which, I must confess, are numerous and convincing. Every one must have observed those immense flocks of swallows which, at the time of their supposed departure, (or rather antecedently to it,) seem by their rapid evolutions to be exercising their wings and strengthening themselves for some arduous journey.

"The air
Floats as they pass, fann'd with unnumber'd plumes."

What motive can we assign for this unusual congregation, but that "intelligent of reasons," they are preparing themselves for their approaching migration? I consider the objection by no means fatal which asserts that they could not remain so long on the wing as the supposed distance of their winter quarters must require them to do; for if we once admit the principle of migration with regard to any of the feathered race, what bird is so well calculated for the undertaking as the swallow, which has been always deemed the emblem of swiftness, and moreover procures its food at all times in the air? Such being the case, the migration of the motacilla genus, and some others, is far more surprising to me than that of the hirundines. It is well known that the nightingale, for instance, scarcely moves a hundred yards from the spot where he first locates himself during the whole summer; and yet we have still stronger grounds for supposing that he "wends his way to distant climes," than the swallow does so, as no one, I believe, has ever asserted that the former passes the winter in a state of torpor. This applies also, though not perhaps in an equal degree, to the blackcap (*M. atricapilla*, Linnæus), and some others, none of which are remarkable for prolonged flights while in this country.

With regard to the naturalization of the golden pheasant, and other natives of the "gorgeous East," the following facts will show that it might easily be effected. I had a share in bringing up two of these birds, which fortunately proved male and female. They certainly

require great attention when young, principally in supplying them with the proper food, and this at stated periods. These were fed regularly every two hours throughout the day; but no particular precautions were taken to screen them from the cold, as they were kept in an open coop (in front), with merely the addition of a wire frame at night to screen them from the rats. During the day they had the run of a grass plat, the coop being shifted weekly to a fresh spot. In this manner they grew rapidly, and both arrived at maturity. I should mention that they had the advantage of having an extremely careful hen for a mother, which is a highly necessary point, as I have had whole broods, both of partridges and pheasants (but especially the former), trampled to death by the clumsiness or over anxiety of their foster parent. The great impediment to breeding from these birds (in a state of captivity) is the extraordinary *ferocity* of the male. He is, in fact, a perfect Blue-beard. The individual, whose history I am relating, not only destroyed the female that was reared with him, but also killed two more in the two consecutive years, and has therefore ever since led a life of *blest celibacy*. I do not know how to account for this strange moroseness of disposition. Perhaps it arose from his having only one partner on whom to bestow his affections, as they are probably salacious, like the rest of this family. Be this as it may, he still lives to *repent of his barbarity*. He has survived the severe winters of 1829-30, 1830-31, although his sole protection from the cold has been a coop by no means air-tight, into which he is driven at night, and always enters it with apparent reluctance. But the circumstance I am about to mention affords a still more decisive proof of their capability of enduring the inclemency of our climate. Whilst in company with a party who were pheasant-shooting the year before last, the beaters sprang a very fine cock gold pheasant, which was known to have escaped from a menagerie more than a year before! It has frequently been seen subsequently, and the keepers moreover report that they have noticed a variety which they considered was the offspring of this bird and the common pheasant.

I was much pleased, a few days since, to hear the delicate warble of the golden-crested wren (*Motacilla regulus*). It had taken its station in a low but bushy fir-tree, so that I was enabled to approach almost close to it. It is very seldom that such an opportunity presents itself, and I was agreeably surprised to find its song so varied. One of your correspondents says, that in confinement these birds are so extremely susceptible of cold, that the least exposure to it is fatal. This is very

remarkable, when we reflect that this little bird is one of the few of that genus (*motacilla*) which endure the utmost rigours of our winter. Did not their sudden death arise from some impropriety of food, rather than from the cause to which it was ascribed? The straw which your correspondent T. M. G. observed the sparrows purloining was probably carried away for the sake of the *corn* left in the ear, and not for the purpose of forming a nest at so early a period. I have now a hen canary, which is a most beautiful singer. What is remarkable is, that she still continues her warble, although she has paired with a cock, so that they are often singing simultaneously. My paper warns me to conclude these desultory remarks. I fear you will deem them

"Non bene junctarum discordia semina rerum;"

but I am emboldened to forward them by your former kindness.

Gravesend.

ON THE TOTAL AND PARTIAL EXTERMINATION OF ANIMALS.

BY JAMES FENNELL.

That the number of species of animals now upon this globe is less than formerly, is an unquestionable fact. Some species of animals, we shall presently see, have totally disappeared from the earth,—while others are daily becoming scarcer, and gradually approaching to their general departure.

The important and extensive science of geology has revealed to us many surprising truths relating to this subject. It tells us of the existence at one period of the mammoth, elephant, rhinoceros, hippopotamus, bison, hyæna, bear, crocodile, &c., in England; and from the circumstance of no human bones occurring among these numerous fossil remains, induces the supposition that man, and such of the above-named creatures as are now extinct, were not contemporaneous beings, the creation of the former being subsequent to that of the latter. The presence of the elephant at one time in this and other countries the most cold and northern, in which it does not and cannot possibly exist, appears a strange fact, but one which perhaps might easily be explained, were we disposed to entertain the views of some modern and shrewd philosophers who from matter of fact, not theory have arrived at the

conclusion, that there ever has been, and is still going on, a gradual and regular change in the earth's polarity, and consequently in its temperature. The author of the "Menageries," when speaking of fossil bones, observes, that though it has been usual to refer the destruction of the animals to which they belong to the great Deluge, yet "it does not in the least invalidate the authority of the sacred books to believe that other causes of the destruction of life may have been called into action, previously to, or simultaneously with, that great event, of which so many undoubted traces may be found. A very general belief now prevails amongst geologists, that the climate of the northern hemisphere has undergone an important change, and that its mean annual temperature must once have resembled that now experienced within the tropics.* Shells and corals, having an affinity with species now living in warmer latitudes; remains of reptiles belonging to hot climates, such as turtles, tortoises, and crocodiles; fossil plants, such as palms of the most luxuriant growth, which could only have been produced under the influence of high temperature; and, above all, the bones of the quadrupeds of the tropics: all these, which have been found in such abundance in Europe, have naturally pointed out that a great change of this nature must have taken place." The same writer remarks, that, "the theory of a slow change of temperature produced by the new formation of great masses of land, has derived considerable support from the well-known facts connected with the remains of the Siberian elephants." Some excellent remarks upon this subject are made by Mr. Lyell, who considers it fair to infer, that "the same change of climate which has caused certain Indian species of testacea to become rare, or to degenerate in size, or to disappear from the Mediterranean, and certain genera of the sub-appenine hills, now exclusively tropical, to retain no longer any representatives in the adjoining seas, has also contributed to the annihilation of certain genera of land mammifera, which inhabited the continent at about the same epoch. The mammoth (*Elephas primigenus*), and other extinct animals of the same era, may not have required the same temperature as their living congeners within the tropics: but we may infer that the climate was milder than that now experienced in some of the regions once inhabited by them,—because in Northern Russia, where their bones are found in immense numbers, it would be difficult, if not impossible, for such animals to obtain subsistence, at present, during an arctic winter. It has

* Lyell's Geology, vol. i. p. 92.

been said, that as the modern northern animals migrate, the Siberian elephant may also have shifted his place during the inclemency of the season; but this conjecture seems forced, even in regard to the elephant, and still more so when applied to the Siberian rhinoceros, found in the frozen gravel of that country, as animals of this genus are heavy and slow in their motions, and can hardly be supposed to have accomplished great periodical migrations to southern latitudes. That the mammoth, however, continued for a long time to exist in Siberia after the winter had become extremely cold, is demonstrable, since their bones are found in icebergs, and in the frozen gravel, in such abundance as could only have belonged to herds which lived at one time in the district, even if those northern countries had once been clothed with vegetation as luxuriant as that of an Indian jungle. But if we suppose the change to have been extremely slow, and to have consisted not so much in a diminution of the mean annual temperature, as in an alteration from what has been termed an "insular" to an "excessive" climate,—from one in which the temperature of winter and summer were nearly equalised, to one wherein the seasons were violently contrasted,—we may, perhaps, explain the phenomenon. Siberia, and other arctic regions, after having possessed for ages a more uniform temperature, may, after certain changes in the form of the arctic land, have become occasionally exposed to extremely severe winters. When they first occurred at distant intervals, the drift snow would fill the valleys, and herds of herbivorous quadrupeds would be surprised and buried in a frozen mass, as often happens to cattle and human beings, overwhelmed in the alpine valleys of Switzerland by avalanches. When valleys have become filled with ice, as those of Spitzbergen, the contraction of the mass causes innumerable deep rents, such as are seen in the *Mer de Glace* on Mont Blanc. These deep crevices usually become filled with loose snow; but sometimes a thin covering is drifted across the mouth of the chasm, capable of sustaining a certain weight. Such treacherous bridges are liable to give way when heavy animals are crossing, which are then precipitated at once into the body of a glacier, which slowly descends to the sea, and becomes a floating iceberg. As bears, foxes, and deer now abound in Spitzbergen, we may confidently assume that the impedding of animal remains in the glaciers of that island must be an event of almost annual occurrence. The conversion of drift snow into permanent glaciers and icebergs, when it happens to become covered over with alluvial matter, transported by torrents and floods, is by no means a rare phenomenon in the arctic regions. During a series of

milder seasons intervening between the severe winters, the mammoths may have recovered their numbers, and the rhinoceroses may have multiplied again,—so that the repetition of such catastrophes may have been indefinite. The increasing cold, and greater frequency of inclement winters, would at least thin their numbers,—and their final extirpation would be consummated by the rapid augmentation of other herbivorous quadrupeds, more fitted for the new climate."* Besides the mammoth (*Elephas primigenus*), the following animals are in the list of extinct beings, of whose history nothing is known but through the medium of post-mortem examinations of their remains,—viz., the mastodon, of which Cuvier supposes there were five species; rhinoceros tichorinus; rhinoceros incisivus; rhinoceros leptorhinus; megatherium; megalonyx; elasmotherium; megalosaurus; ichthyosaurus; plesiosaurus; ammonitis; together with several undescribed species of fish and insects.

Perhaps few large animals co-existent with man have become extinct, with the exception of a singular species of gallinaceous bird, the dodo; though probably many species of insects and other small beings, on which attention has but lately been bestowed, have passed unnoticed into oblivion.

The extinction of the dodo (*Didus*) is supposed to have taken place towards the conclusion of the seventeenth, or the commencement of the eighteenth century. Its disappearance may be ascribable to its not having been able to defend itself from the attacks of those who pursued it for its flesh†, in consequence of its having been incapable of flying, owing to the shortness of its wings,—and unadapted for running, owing to the shortness of its legs and the unwieldiness of its body. The only places which it is known to have inhabited are, the isles of Bourbon, Mauritius, and Roderigue. Bourbon and the Mauritius having become colonised previous to Roderigue, it is conjectured to have disappeared from them some time prior to its extermination in the latter place. It would seem, from the circumstance of no efforts having apparently been made to retain the breed in either of the countries which it inhabited, and the neglect of a timely transmission of individuals, in a preserved

* Lyell's Geology, vol. i. p. 96.

† Herbert, an old traveller, who gives a strange description of the bird, states that it was more pleasant to the eye than to the palate; but Legaut, another old traveller, in his account of the bird, as translated from the French by Mr. Thompson, says that it was "extremely fat, and of most excellent flavour, especially when young."—J. F.

state, to the museums of different countries, in none of which, at the present day, does one perfect specimen exist, that the destruction of the species must have been carried on so quickly that its eventual extinction was not anticipated. With the exception of the specimen once contained in the museum of Tradescant at Lambeth, and which is said to have been transferred by Dr. Ashmole to the Ashmolean Museum of Oxford, in which it is recorded to have remained until 1755 (at which period it was destroyed on account of its having become decayed), no entire specimen appears ever to have found a place in the cabinet of the naturalists. The only remains ascertained now to exist of this creature are in the Ashmolean Museum, which contains a bill and leg of the Tradescant specimen; in the British Museum, which contains a single foot, once belonging to the collection of the Royal Society; and, lastly, in the Paris Museum, which is enriched by the possession of, according to Mr. Lyell, "the head, sternum, and humerus of the dodo," sent thither amongst some fossil bones discovered under a bed of lava in the Isle of France. A disparity has been observed between the size and length of the foot in the British Museum and that in the Ashmolean Museum,—which observation has induced some to suspect that this country must have either contained two different specimens, or else one whole specimen, and only the leg of another. If the latter suspicion be correct, then the difficult question presents itself, whether this disparity is to be ascribed to a difference of age, sex, or species. The accounts given by various writers are so dissimilar, that, assuming them to be correct, one might indeed suspect that more than one species of dodo existed.

Since the disappearance of the dodo, some other creatures of smaller size have become extinct, probably in consequence of the scarcity or complete eradication of those wild plants that constitute their food. To what other cause can we refer the loss of our Hampstead butterfly* (*Vanessa Hampstediensis*), which has not been seen for upwards of a century; our scarce swallow-tailed butterfly (*Papilio podalirius*), which has not been seen since the time of Ray; and, our straw May-fritilary butterfly, which has not been seen since the time of Petiver? It is not difficult to imagine that the loss of a few species of weeds may have produced all this destruction of animal life, for we well know that some animals are so restricted in their diet

* Vide Stephens's Illustrations of British Entomology, vol. i. page 5, for figures and further information respecting this species.—J. F.

that they will eat only of one particular species of plant, and will perish sooner than feed upon other plants, though closely allied to, or mere varieties of, their favourite food. This is instanced most conspicuously perhaps in the case of the larva of the ringlet butterfly (*Hipparchia hyperanthus*); of the brown heath butterfly (*Hipparchia pamphilus*); of the nettle-butterfly (*Vanessa Urticæ*); and in the case of almost all the aphides: the first of these feeding exclusively on the annual poa-grass; the second on the dog's-tail grass*; the third on the nettle; and most of the various species of the last example living entirely upon a single species of plant, only certain parts of which in some instances give nourishment to one particular kind of aphis, from which circumstance it is not uncommon to find the leaves, stalks, &c. infested by different species. The prevention, then, of any animals like these from becoming extinct, it will be seen, must depend upon the existence and wide distribution of those peculiar plants from which they derive their sustenance.

Leaving that division of my subject relating to the total extinction of animals, the consideration of their partial extermination, with special reference to the British Kingdom, now claims our attention.

Naturalists are well aware that as the cultivation of the earth, the chief employment of mankind, progresses, certain animals either, from fear, compulsion, or other causes, recede in search of other quarters where they may rest undisturbed and in the full gratification of their wants, until once more being encompassed by the further advance of cultivation, and again subjected to the assaults of man, they gradually diminish in numbers, and eventually become extirpated. The enclosing of land, the felling of timber, the sports of the field, and similar acts, have also driven and are now driving many animals from our island.

To the followers of the chase we may attribute the extermination of the wolf, bear, wild boar, and beaver from this country.

Pennant, when alluding to the extirpation of wolves, confesses that he cannot state for certain when the last wolf was destroyed in Scotland; but says, upon the authority of Hollingshed, that the flocks in that country suffered extensively from their ravages in the year 1577. He adds, also, that he is informed that at the time of his then writing (1768) none were to be found there. It is said, however, by more recent writers, that the last wolf that inhabited Scotland was killed at Lochaber, by Sir Ewen Cameron of Lochiel, about the year 1677. A

* Insect Miscellanies, page 24.

writer in later times states, but upon what grounds does not transpire, that wolves were not extirpated from Scotland until the end of the seventeenth century. In England several attempts were made to destroy the whole race of these ravenous animals, whose constant depredations rendered such attempts very justifiable*. King Edgar, at about the year 972, (not during the tenth century, as the author of the "Menageries" states,) with a view to their destruction, dispensed with the punishment of those who had committed certain offences, upon their producing a specified number of wolves' tongues; and the Welch, instead of paying to him their wonted tribute in money, were demanded to produce three hundred wolves' heads every year, which great number was furnished, but not without considerable difficulty and the incurring of much risk, for the space of three years, at which time (975) the royal exacter died. After his decease it seems this exaction was abolished, on account of no wolves remaining in Wales at that time. From the death of Edgar the increase of wolves appears to have been allowed to go on in England, without the interference of the legislature, during the space of three hundred and six years, until at length Edward the First, in the year 1281, issued a proclamation for their destruction†, which seems to have been fully and speedily effected, as no mention is found of their existence in a wild state in this country subsequent to the adoption of this measure. More than four centuries had elapsed after the extermination of wolves in England, before they were totally destroyed in Ireland, which land was not rid of them until about the year 1710, when the last presentment for their destruction is said to have been made in the county of Cork. It is affirmed, that occasionally during hard winters, wolves make their appearance in France‡; and that "several were seen in the forests near Boulogne, in 1818§."

---

* "To look back into the Saxon times we find that in Athelstan's reign, wolves abounded so in Yorkshire, that a retreat was built at Flixton in that county, to *defend passengers from the wolves, that they should not be devoured by them*; and such ravages did these animals make during winter, particularly January, when the cold was severest, that our Saxon ancestors distinguished that month by the title of *wolf moneth*. They also called an outlaw *wolfshed*, as being out of the protection of the law, proscribed, and as liable to be killed as that destructive beast."—Pennant.

† Camden, as cited by Pennant, states that certain persons at Wormhill in Derby, held their lands on condition of their pursuing and killing the wolves that infested the country.—J. F.

‡ Menageries, vol. i.

§ The Zoological Gardens, in Regent's Park, contain a specimen from France.—J. F.

The brown bear (*Ursus arctos*) was once wild in this country, and afforded to the lovers of the chase much amusement. At what time the last English bear was destroyed does not appear, but it was probably after the reign of Queen Elizabeth, as bear baiting was then a favourite amusement; though the bears employed for the purpose might have been brought from abroad, as the importation of bears is known to have been carried on long previous to their extirpation from this country. The last bear wild in Scotland is said to have perished in the year 1057.

Wild-boars were in former times common in Britain; but the enclosing of land, and the intentional worry to which they were subjected, have long extirpated the whole race. The time at which they became extinct in this country seems not to have been recorded. The celebrated Welsh legislator, Hoel Dda, is said to have prohibited his grand huntsman from chasing wild-boars at any other time that between the middle of November and the beginning of December. "William the Conqueror punished with the loss of their eyes any that were convicted of killing the wild-boar, the stag, or the roe-buck; and Fitz-Stephens tells us, that the vast forest that in his time grew on the north side of London was the retreat of stags, wild-boars, &c."*

That sagacious and amusing animal, the beaver (*Castor fiber*), once dwelled in our lakes and ponds; but the value of its fur found it so many pursuers that the species has long since disappeared. It is supposed to have become scarce at the end of the ninth, and to have become extinct in the twelfth century. Pennant states that Giraldus Cambrensis, in his Itinerarium Cambriæ, remarks that when he travelled through Wales in 1188, beavers were only found in the river Teivi. The skins of beavers forming so extensive and lucrative a trade, causes them to be eagerly sought after in Canada and the other countries which they at present inhabit; and such numbers are annually destroyed, that the unwelcome prospect presents itself of their soon becoming universally extinct. Indeed, it is reported, that they have already become scarce in North America.

The Urus Scoticus, or wild-bull, was formerly common in England and Scotland. William Fitz-Stephens mentions among the animals inhabiting the forest situated on the north of London, wild-bulls. They have long since, however, been extinct; but the precise time when they became so has not been recorded, though it is generally supposed to have been prior to the death of Henry the Eighth in 1547. The breed was

* British Zoology, vol. i, p. 44.

destroyed by horsemen, who drove them singly from the herd towards places where musket-men were stationed in readiness to kill them. The prevailing colour of all the wild species was white, and their markings were always alike in different individuals. Some remains of the urus are said to exist at the present day in a reclaimed state at Chillingham Castle, Northumberland; Gisburne, in Craven, Yorkshire; Wollaton, Nottinghamshire; Leine Hall, Cheshire; Charby, Staffordshire; and in Hamilton Palace Park, Scotland. From the non-appearance of the *urus* in the catalogues of animals now indigenous to foreign lands, it would seem, indeed, that in its wild condition it is not only extinct here, but everywhere. It may be observed, in passing, that our common domesticated animals of the bovine tribe are of much larger stature, and are considered by naturalists to be either entirely of foreign extraction, or an improved produce originally obtained by crossing the wild with the exotic species.

It is a curious fact that the common ass was once extinct in this country for several years, and that we owe those that are now in use to a second importation from Spain. It is stated to have been "entirely lost among us during the reign of queen Elizabeth." Hollingshed informs us that in his time, "our lande did yeelde no asses." But we are not to suppose that so useful an animal was unknown in these kingdoms before that period, for mention is made of them so early as the time of king Ethelred, about four hundred years preceding; and again in the reign of Henry III.; so that it must have been owing to some accident that the race was extinct during the days of Elizabeth. We are not certain of the time it was again introduced, probably in the succeeding reign, when our intercourse with Spain was renewed; in which country this animal was greatly used, and where the species is in great perfection."*

The discovery of an otter (*Lutra vulgaris*) now-a-days is a very uncommon occurrence in this country, though once they were plentiful, and even so in the neighbourhood of the metropolis. Walton, in his "Angler," published nearly two hundred years ago, has introduced an otter-hunter, who repairs for sport to the small streams in the neighbourhood of Tottenham, Middlesex. "Hunting the otter was a favourite pastime in Britain; but it has now fallen greatly into disuse; a few otter-hounds are, however, still to be found. His Grace the Duke of Buccleuch has some braces of them. During Queen Elizabeth's

* British Zoology, vol. i. p. 12.

reign, large packs were kept for this diversion, which was eagerly practised by the young nobles *." That otters were scarce in Hampshire in Gilbert White's time, appears from his mentioning with such delight that one was brought to him shot within his own parish.

The badger (*Meles Europæa*), an animal that is frequently made the object of much diabolical cruelty, has become considerably rarer in England than formerly, though not so much so as the otter.

The cat, though never a native of our island, yet was once wild in it. Wild cats are now, however, very scarce, and only to be found in our least frequented woods and forests †. They were the most ferocious animals we had, and therefore it behoved the people to destroy them as quick as possible; and we accordingly find that sportsmen, by whom they were considered as beasts of the chase, sallied forth for that purpose. A specimen of the wild cat, from Scotland, may be seen in the gardens of the Zoological Society.

It is a well known fact, that our indigenous black rat (*Mus rattus*), a species which was formerly universally diffused throughout Great Britain, has become nearly extirpated in consequence of the introduction of the more powerful brown rat, generally called the *Norway* rat, though it appears not to be an inhabitant of that country, but a native of Persia, from whence we received it. Pennant states, that they arrived in England about forty years before the time of his then writing (1768), and in Paris about seventeen years prior to that period, or not until three-and-twenty years after their appearance in this country. A modern writer, but of no celebrity, asserts that they appeared in France towards the middle of the sixteenth century, and were first observed in the neighbourhood of Paris. "Its first arrival, as I am assured," says Goldsmith, "was upon the coasts of Ireland, in those ships that traded in provisions to Gribraltar; and perhaps we owe to a single pair of these animals the numerous progeny that now infests the

* Brown's Sketches of Quadrupeds, p. 157.

† Perhaps it will be long ere this country becomes entirely destitute of wild cats; for the existence of wide woody forests, well stocked with live prey, frequently tempts cats reared in houses to forsake their domesticated life for one more natural, and on that account, perhaps, preferable. "In Jamaica," says a female writer on Natural History, "the domestic cat will sometimes become wild from the quantity of food at all times to be found in the woods and mountains." I have been informed that wild cats are at present more restricted to the hills and woods of Scotland and Ireland than of England.—J. F.

whole extent of the British Empire *." America, according to Pennant, received its stock of brown rats by a ship from Antwerp. "Pallas tells us that they arrived at Astracan in the autumn of 1727, in such numbers, and in so short a time, that nothing could be done to oppose them. They came from the western desert, and traversed the waves of the Volga, which unquestionably must have swallowed up part of their horde. They have not advanced any farther north, and are not to be found in Siberia †." The brown rat has diffused itself almost over the whole of those countries just particularised. In Scotland they do not seem to have established themselves so generally as in England and Ireland. Cuvier says that in some parts of France the brown rat is not known; and Dr. James Mitchell, in an interesting lecture delivered some time since at one of the metropolitan institutions, in adverting to the invasions made by the brown rats, stated that though they had appeared in London in considerable abundance, yet they had not hitherto extirpated the black rat, which was to be found in the society of the former, in many of the large distilleries and breweries. As the few black rats that remain are continually being routed by the stronger and larger species, we now and then hear of their appearing in different places, to which they probably resort to avoid their annoyers. In the catalogue of the Zoological Gardens, published in 1831, it was stated that the black rat (*Mus rattus*) had lately appeared in various parts of London; and a correspondent to this Magazine has informed us that they have recently made their appearance at Ballindalloch, Scotland. (Vide page 102.) So scarce, however, were black rats in Goldsmith's time, that he says he does not remember ever to have seen one.

Owing to the encroachment of cultivation and the consequent disappearance of open and seldom traversed plains, the bustard (*Otis tarda*) is now very seldom to be seen. It is one of the scarcest birds at present in this country, though once it was very abundant in different places. Though this and many other birds, nearly extirpated, may be great desiderata to the cabinet of the collector; yet it were well, and to their credit, if, upon the discovery of such living rarities in their neighbourhood, they would refrain from destroying or alarming them, for there can be but little doubt that this and other rare species, if permitted to pass unmolested, would, in a few years after a cessation of hostilities, again become plentiful, and afford to all the opportunity of observing their habits. Viewing the matter in a natural history light, I cannot but consider that the

* Natural History, vol. i. p. 21. (new edition.) † Ibid, p. 212.

destruction of any species of bird or other animal nearly extinct, for the mere purpose of placing it among a collection of stuffed skins, is an unjustifiable and unpardonable act, the commission of which may leave a gap in the chain of beings, and, by furnishing a subject in future ages, for much fruitless discussion, speculation, and doubt, impede the progress of knowledge. The sensations of a true lover of nature, or—(if you think that designation too poetical and sentimental, as some do)—of a true naturalist, would, I conjecture, partake more of regret than of pride, upon the reflection that his hand had destroyed the last of a race of beings.

The egret and the crane were formerly plentiful throughout England, as is proved by the immense numbers that were served up at ancient feasts.* The great demand for these birds as delicacies for the table led to their extirpation in this country. No mention can I find of the time at which the egret became extinct among us; but it must have been prior to the time at which Pennant wrote (1768), as he observes that he had not met with a single specimen, but took his description of the bird from one in Dr. Mauduit's cabinet at Paris.

The crane (*Grus cinerea*), it is well known, is not now a resident in this country, as it was in the days of Aldrovand and Willoughby, when they bred in our marshes, and a fine of twenty-pence was inflicted upon those who removed or destroyed its eggs. Ray says that in his time they abounded during the winter in Lincolnshire and Cambridgeshire. William Turner, the old English botanist, in his account of the principal birds of Pliny and Aristotle, published in 1544, mentions his having frequently seen the young birds in our marshes. Pennant upon

* Since writing the above I have seen Selby's new volume of Illustrations of British Ornithology; and I find that he suspects, with Dr. Fleming, that the egret of our ancient gourmands was nothing more than the lapwing (*Vanellus cristatus*). He adduces certainly some very strong facts to disprove that their bird was the egret, but he does not prove by research or otherwise that they designated the lapwing the egret. His principal and only point for objecting to the conclusion that the bird in question was of the latter species, is derived from the circumstance of the early writers not having mentioned it as a native of Britain. "Willoughby, in his description of the Lesser White Heron (which is without doubt the bird now under consideration), expressly states that the specimen from which it was taken was obtained in Venice; and he never alludes to this bird as inhabiting or visiting the British Islands. Pennant is the only writer who adduces any evidence of the egret having been killed in Britain; and even that evidence is far from being conclusive, as it only amounts to his having once received from Anglesea the feathers of a bird shot there, which he conjectured to be those of the egret."—Selby's Illustrations of British Ornithology, vol. ii. page 22.

learning, after instituting strict inquiries in the above counties, that the species was entirely unknown there, justly concluded that they had forsaken our island.

The stork (*Ardea ciconia*), many years back, was occasionally seen; but the country having become more populous, they have not been observed for years. I have consulted several works, with the view of learning when they were last observed, but can find no instances with dates prefixed.

It is perhaps owing to the disappearance of retired places suited to the establishment of heronries, that herons in this country have become so rare. The heronries recorded to be in existence in England at the present day do not amount to more than *eleven*. The places at which those heronries occur are as follows—viz. Wanstead Park, Essex, (vide Field Naturalist, vol. i. p. 359); Colonel Wilson's estate, Didlington, in Norfolk, (Zool. Gardens Illustrated, vol. ii. p. 142); Windsor Great Park, on the borders of Bagshot Heath; Penshurt Place, Kent; Cobham Hall, Kent; Mr. Bethel's seat, Hutton, near Beverley in Yorkshire; Lord Carnarvon's seat, Pixton; Gobay Park, on the road to Penrith, near a rocky pass called Yew Crag, on the north side of the romantic lake of Ulswater; Cressi Hall, six miles from Spalding, in Lincolnshire; Downington-in-Holland, in Lincolnshire; Brockley Woods, near Bristol; and Brownsea Island, near Poole, in Dorsetshire.

The wood-grouse, or cock of the wood (*Tetrao urogallus*), once inhabited Ireland and Scotland, but has been extinct in the former country for nearly seventy years, and in the latter for fifty years. Wood-grouse now and then find a place at our tables; but such individuals, according to Bullock, are imported from Sweden. "It is to be regretted," says Sir William Jardine, "that some of our extensive and wealthy northern proprietors do not attempt the introduction of the wood-grouse; extensive pine or birch forests, with quiet, would be all the requisites; and the birds themselves, or their young, could very easily be obtained, and at a trifling expense*."

It is notorious that the felling of trees for timber has operated to a great extent towards the diminution of rookeries. "In many counties very few rookeries remain, where once they were considered as a necessary appendage, and regularly pointed out the abbey, the hall, the court-house, and the grange†."

* White's Selborne, p. 21—note. † Knowledge for the People, Part iv. p. 104.

When this country presented a more extensive and secure abode for birds of a solitary disposition, it is probable that several of those species of owls, now so rarely seen, were common in it. The long-eared owl (*Strix otus*), the eagle owl (*Strix bubo*), the snowy owl (*Strix nyctea*), and the little owl (*Strix passerina*), are extremely scarce; and the only localities for the less rare, but yet not common, short-eared owl (*Strix brachyotus*), are Norfolk, the northern counties of England, the north of Scotland and its islands.

The bad taste which induces proprietors of land to destroy old trees on account of their decayed state, is supposed by Selby to have occasioned the redstart (*Sylvia phœnicurus*) to have become scarce in Northumberland. "For some years past," says he, "the redstart has become of comparatively rare occurrence in Northumberland; but without any apparent cause for this change in the line of its migration, unless it may be attributed to greater attention having been latterly bestowed upon the management of woods, &c., and a consequent deficiency of old and decaying trees, for the purpose of nidification, and stone-walls having, during the same period, so much given way to the use of hedges for inclosure."

The grey lag goose (*Anser palustris*) has, in consequence of the extending prevalence of cultivation *, become very scarce in the fens of Lincolnshire, and the other places indicated by the earlier writers as their breeding quarters. "The draining and cultivation of these marshy tracts," says Selby, "under progressive agricultural improvement, and the increasing population of the kingdom, has, however, banished these birds from their native haunts; and they are now, comparatively speaking, of rare occurrence, and, as far as I can ascertain, only met with in small flocks during the winter."

The dotterel (*Charadius morinellus*, Linnæus) has become nearly extirpated in some parts of England in which it was once common, owing to its having been shot in great numbers for the table. But a less useful purpose, it is said, has for some time been causing it to

* With reference to the scarcity of this species of goose, owing to the appropriation of their favourite haunts to the purposes of cultivation, I may perhaps be excused quoting the following pithy piece of old rhyme, which on the present occasion is very *àpropos*.

"'Tis bad for either man or woman
To steal a goose from off a common;
But who can plead that man's excuse
Who steals the common from the goose?"

become scarcer and scarcer in the vicinity of Keswick, in Cumberland, where considerable quantities are destroyed merely for the sake of its feathers, which are extensively used in the manufacture of artificial flies for anglers *. Selby observes, that the bird is scarce on the moors of Cumberland, but does not appear to be aware of the cause of its scarcity.

Besides the above-mentioned mammalia and birds, there are some smaller animals, lower in the scale of animated nature, that have become nearly or totally extirpated from the British Islands.

We are told that the patron saint of Ireland banished from that land all the toads and noxious reptiles†. We are informed by Goldsmith that the frog (*Rana aquatica*) was designedly introduced into Ireland some years before those all-conquering animals, the brown rats, (of whose influence in expelling the black rat I have already spoken) took possession of that country, and it was observed to multiply amazingly. "The inhabitants," he states, "were pleased with the propagation of a harmless animal that served to rid their fields of insects; and even the prejudices of the people were in its favour, as they supposed that the frog contributed to render their waters more wholesome. But the Norway rat (brown rat) soon put a stop to their increase; as these animals were of an amphibious nature, they pursued the frog to its lakes, and took it even in its own natural element. I am, therefore, assured that the frog is almost extinct in that kingdom; and that the Norway rat, having no enemies left to destroy, is grown less numerous also ‡."

The natterjack (*Rana rubeta*) has become so scarce in England, that it was questioned, a short time ago, in the Magazine of Natural History, whether it was still to be found here or not. From the replies that were elicited to this query, it appears that though rare and local, yet it is not extinct.

Were I better acquainted with Ichthyology, a branch of Natural History which is too much disregarded at the present day, I have but little doubt that I might furnish a few instances of the extermination

---

* Knowledge for the People, Part iv. p. 103.

† Not having sufficient credulity to believe in the Saint's power, I am disposed to think that some peculiar quality of the soil, water, or atmosphere, is the real cause of toads, &c., not being found in Ireland. Toads, &c. are not the only animals not to be found in Ireland, for the mole (*Talpa Europæa*) does not exist therein, on account, it is supposed, of the general moist nature of the country.—J. F.

‡ Natural History, page 210.

of fish; but I do not remember to have either read or heard of any, though I am aware that it has been observed that several species of fish have diminished in number in consequence of the introduction of steam-packets on our rivers. The influx of nauseous and poisonous filth and refuse from sewers and manufactories has also contributed to produce the same effect.

It is not alone in England and the countries adjacent that certain species of animals are progressing towards their extirpation. Bonaparte tells us that in "Canada and the densely peopled parts of the United States, *wild turkeys* were formerly very abundant; but, like the *Indian* and *buffalo*, they have been compelled to yield to the destructive ingenuity of the white settlers, often wantonly exercised, and seek refuge in the remotest parts of the interior. Although they relinquish their native soil with slow and reluctant steps, yet such is the rapidity with which settlements are extended and condensed over the surface of the country, that we may anticipate a day, at no distant period, when the hunter will seek the wild turkey in vain."

We have now seen the influence of man and other agents exerted sometimes designedly, sometimes unintentionally, in extirpating various species of animals in different parts of the world, and driving them from one quarter to another where they may rest with less chance of being annoyed. But whilst man has been the principal cause of the extirpation of the animals herein mentioned, he has been instrumental to the dissemination of others, by introducing them into countries where previously they did not exist.

Poddington, 22nd February, 1834.

HINTS FOR COLLECTING WATER BIRDS.

BY C. PARSONS, ESQ.

AQUATIC birds are subject to so much variation from age and change of season, that several specimens of each are essentially requisite to form a complete collection. The annual changes many of them undergo, have led to various errors in books on ornithology,—but they are better understood now, and have been accurately pointed out by late writers; it would, therefore, be useless to describe them minutely here. I shall merely notice them, to show how many specimens of each sort

are necessary to exhibit the birds in every variety of plumage, and also the times, as far as I am able, when they may be obtained in greatest perfection.

As the plover family, following the bustards, connects the waders with the land birds, I will begin with them:—and, first, of the golden plover (*Charadrius pluvialis*), four specimens of which will be requisite,—one in summer with its black breast, one in winter when it quite loses it, one in March when acquiring it, and a young one in autumn: and the same may be said of the grey lapwing (*Vanellus melanogaster*); the young of this species very much resembles the young of the golden plover, but may be distinguished from it by the black feathers under the wing. These birds are seldom seen in flocks, but generally in little bunches of four or five, and very frequently a few are interspersed with a flock of dunlins.

Of the ring dotterel (*Charadrius hiaticula*), an old male and female and the young will be sufficient.

The lapwing (*Vanellus cristatus*) is handsomer the latter end of April and May than at any other time of the year; the whole plumage is more vivid, the black on the breast enlarged, and the crest longer: the female is not quite so bright in colour, and the young have but a very short crest till after the moult.

The sanderling (*Calidris arenaria*), it will be necessary to have at least three specimens of,—the old in summer and winter, and the young in autumn, and if one or two in change be added, it will be better; the young have all the feathers of the back widely margined with white, and after the moult become plain grey till the spring, when they again change,—the middle of the feathers of the back get black, and are edged with rufous.

The oyster-catcher (*Hæmatopus ostralegus*) loses the white on the neck in the summer months; one should be got then, and one in winter; the young have the feathers of the back and wings margined with brown.

The heron (*Ardea cinerea*) does not acquire its beautiful crest, and long flowing feathers of the breast, till after the third year, and is rather difficult to be met with in this plumage; the young have but the rudiments of these, and in this state nine out of ten will be found, at least in this part of the world. The bittern (*Ardea stellaris*) is perfect after the first moult; one of these may be considered sufficient; the males are, however, rather the brightest coloured.

The curlew (*Numenius arquata*), and the whimbrel (*N. phæopus*),

have but little variation of colour,—but the curlew varies very much in size, and the young of both species have the bill shorter than the old; several should be shot, and a fine long-billed one selected; any time in winter or spring will do.

The young turnstone (*Strepsilas collaris*) differs much from the old —and specimens of each should be procured. I am not aware they undergo any change from season, but have never seen them except in the month of August, when they frequent our coast.

The birds comprising the *Tringa* genus are subject to so many changes, that a considerable number of each is requisite to illustrate the species properly. The dunlin (*T. variabilis*) varies so much, that, except during the winter months, it is difficult to find two specimens that are exactly alike. In addition to the summer and winter plumage of this group, several others in the intermediate states will add great interest to a collection; they should be killed at different times in the autumn and spring, to show the gradual change of colour; and two or three young ones at different times in the autumn. Of the ruff (*T. pugnax*) the variety in summer is almost infinite; three or four, presenting the greatest contrast, should be selected. A female, or reeve, a male in winter, and a young one in autumn, which very much resembles the female, should also be added. The beginning of May will be found the best time for getting the males in perfection.

The red-shank (*Totanus Calidris*), green-shank (*T. Glottis*), and spotted red-shank (*T. fuscus*), differ considerably in summer and winter; the young but little from the winter plumage of the adult. They have but little sexual difference, a characteristic, indeed, of the whole genus *Totanus*. The green sand-piper (*T. ochropus*) I have never seen except in the autumnal months, when I have shot the old and birds of the year, which differ sufficiently to require specimens of each; as does also the common sand-piper (*T. hypoleucus*).

The godwits become beautifully red in the spring. The male of the common godwit (*Limosa rufa*) is much smaller, and in summer of a brighter red than the female; one or two of these should also be got when in change, and the young in autumn. May will be found the best month for getting these and all the various species of sand-pipers in their summer plumage in the greatest perfection; if deferred till later, and until they begin to breed, the feathers of many get rugged and shabby.

A well selected assortment of these families forms perhaps the prettiest and most interesting group of British birds that can be got

together; it is, however, a difficult task; many of the species are exceedingly rare, and most of them shy and difficult of approach,—and frequenting the marshes, sea shores, and wastes, are not so generally known as land birds, which are constantly before us; and it is to be regretted that so many of them are disfigured, and their beautiful proportions and elegant attitudes entirely destroyed in setting up; they are difficult birds to do well, and it is impossible for any one to give a natural air to them who has not made himself acquainted with the living animals; but whether a duck, a sand-piper, a hawk, or a warbler, they are, by the generality of bird-stuffers, all done on one principle; the consequence is, that if one is well done, the others are sure to be spoiled,—and I think it will generally be found that they do large birds better than small ones. Bird-stuffing cannot be done or explained by fixed rules; every group of birds requires something peculiar to be observed, either in fixing the leg wires, the degree of fulness which should be given them, and many little particulars only to be acquired by practice, but without a knowledge of which birds never look well; and admitting a bird to be properly stuffed and ready for mounting, here if the artist be not acquainted with the attitudes of the species he is at work upon, all his former care in stuffing will not enable him to give his bird a correct and lively appearance, but it will look, as stuffed birds, and particularly sand-pipers and their affinities, too often do, stiff and unsightly, without any resemblance of nature.

But to proceed; and next of the gallinule (*Gallinula chloropus*), of which an old and young one should be procured; the red on their bill is brightest in the spring, and the young do not acquire it at all till the second winter; the female is not quite so bright as the male.

The coot (*Fulica atra*) varies but little; the male has rather a larger frontlet than the female, and in the young it is very small.

The phalarope (*Phalaropus platyrhinchus*) undergoes similar changes to the knot and godwit, and has been called, according to season, the red and grey phalarope; it is of course desirable to get them in both dresses, but they are not often to be met with.

Of the grebes old and young are quite requisite. A fine old crested grebe (*Podiceps cristatus*) has an exceedingly curious appearance, but it is not very easily got in that state, although the young are common enough, they do not get quite perfect till the third winter. The Dab-chick (*P. minor*) is also three years before it gets its black chin and perfect adult plumage.

I come now to the web-footed tribes (*Palmipedes*)—and first of the

Terns: these should all be got on their first arrival here in spring, they are then in beautiful feather, and I must caution the collector to be very particular in keeping the birds he shoots as clean as possible, a hint to be attended to in all birds killed for preserving, but more particularly requisite in these, as the feathers are very delicate, and the beautiful gloss on them can never be restored when once they are soiled or made bloody; they are also very liable to run at the mouth, which is sure to stain the feathers; to prevent this a piece of cotton or tow should be put in the mouth and through the nostrils as soon as shot, and always avoid (when possible) carrying them in the pocket, a better way is to tie a piece of string to their legs and sling them under the arm by a belt, I always find that I injure them less so than in any other way. They lose their black heads in winter, but are not with us then; I have, however, frequently shot them in autumn just before they leave, with the head half white. The Sandwich Tern (*Sterna cantiaca*) I have killed in this state, and have also had the pleasure of bringing home the beautiful eggs of this fine birdfrom some Salterns at the mouth of the river Blackwater in this county, and also from the Fern Islands, on the Northumberland coast. A young of all the species should be obtained before they take their departure.

In the gulls, the variety of plumage from the young to the perfect state is exceedingly great. The black-backed gull (*Larus marinus*) requires five specimens; an adult bird in summer and winter, the young before the first moult, one the first winter, and one the second; the third winter they are perfect. I never noticed any difference of colouring in the sexes. The same number of specimens are required for the lesser black-back (*L. fuscus*) and the herring gull (*L. argentatus*), they being the same time in immature plumage; the young of these three species are very much alike. The common gull (*L. canus*) must also have five specimens; the old in summer and winter, the young before moulting, one the first winter, and one the second; they are nearly perfect then, having only a little brown on the tail, and in the spring are quite so. Of the black-headed or laughing gull (*L. ridibundus*), four specimens will be sufficient; one in summer with its black head; one in winter, and two young ones; one before the moult and one after; the following spring their plumage is complete; they assume their black head in March, and the latter end of that month or beginning of April should be obtained: if killed later in the summer the black on the head is not near so fine, and the gloss on their breast in a great measure lost.

Wild geese exhibit so little variety that one of each sort will be sufficient. The two species, the grey goose (*Anser palustris*) and the bear goose (*A. ferus*) are apt to be confounded; they are however easily discriminated by the bill. The bernacles (*Anser Bernicla*) I have noticed a considerable difference in; but whether mere variety, or whether the young are not perfect the first winter, I do not know. The brent goose (*A. Brenta*) varies in size, the smaller ones are the females; the young have the feathers of the back and wing coverts edged with brown, but there is scarcely difference enough in them to require more than one specimen. The sheldrake (*Tradena vulpansa*) must have three, a male, female, and the young; and if the male be got in the spring it will, I think, be found brighter in colour than if killed in winter.

The several species of ducks differ much in sex: the females of most are clad in the same plain garb, and the young males in general much resemble them. A young of all should be obtained.

A mallard and duck of the *Anas Boschas* will be sufficient, in addition to a young one. A male and female pintail (*Dafila caudacuta*); the female of this species may readily be distinguished from others by its more slender and elegant shape. I believe the male acquires his full plumage after the first moult. A male, female, and young male wigeon (*Mareca fistularis*) will be required. The old male has the whole of the wing coverts of a pure white. The eider duck (*Somateria mollissima*), being two or three years acquiring perfect plumage, in addition to the old, at least two young males will be necessary in different degrees of perfection. It is useless particularly to notice the scoup duck, golden eye, and others, as they all vary in the same manner, and the like number of specimens should be got of each. The young males may soon be recognised; if examined, a feather or two in different parts will be seen breaking out into the gay markings of the old, at first hardly perceptible, but gradually increasing till complete.

Care is requisite in stuffing these birds not to make them larger than natural; to attend to the shape of the back, and not make the bird round; and, though last not least, to avoid stretching the neck beyond its proper proportions, as their skins will extend a great deal beyond the real size of the birds.

The goosander (*Mergus merganser*), though by no means an uncommon bird, is not often seen in its perfect plumage, those that are killed being generally young, or dun divers, as they are called. We have them here, but it is a rare thing to see an old bird; perhaps the greater part of the old do not come so far south.

Two or three young gannets (*Sula alba*) should be got in different stages of perfection. They are first of all covered with white down, but I never saw one in that state; they then become brown all over, in this stage called boobies by the fishermen, and are not perfect till the third or fourth summer.

I am not much acquainted with the rock birds, therefore will say nothing about them; and I have already extended this paper to a greater length than I intended.

Southchurch, March 7, 1834.

AMAZON ANT (*Formica rufescens*, Latreille).

BY THE EDITOR.

This is a species whose history was first investigated by the younger Huber, and whose economy is so extraordinary as almost to exceed belief. The details, indeed, have hitherto been credited chiefly if not solely on the well known veracity of Huber; but in the autumn of 1832 we had an opportunity of verifying them, both in the Black Forest and in Switzerland, where the species is found chiefly on the borders of the great pine forests.

The species has not hitherto been found in Britain, and we were unsuccessful in our attempt to bring over from the Black Forest a nest of live ones, which we had placed in a box for the purpose. This ant is of a pale reddish colour all over, the female larger than the worker, and of a clear colour: the male, pale black. We think that it will prove most interesting to the reader to give Huber's narrative in his own words.

"On the 17th of June, 1804," says he, "whilst walking in the environs of Geneva, between four and five in the evening, I observed close to my feet, traversing the road, a legion of amazon ants. They moved in a body, with considerable rapidity, and occupied a space of from eight to ten inches in length, by three or four inches in breadth. In a few minutes they quitted the road, passed a thick hedge, and entered a pasture-ground, where I followed them. They wound along the grass without straggling, and their column remained unbroken notwithstanding the obstacles they had to surmount; at length they approached a nest inhabited by dark negro ants (*F. fusca*), the dome of which rose above the grass, at a distance of twenty feet from the

hedge. Some of its inhabitants were guarding the entrance, but, on discovery of an approaching army, darted forth upon the advanced guard. The alarm spread at the same moment in the interior, and their companions came forth in numbers from their underground residence. The amazon ants, the bulk of whose army lay only at the distance of two paces, quickened their march to arrive at the foot of the ant-hill; the whole battalion, in an instant, fell upon and overthrew the negro ants, who, after a short but obstinate conflict, retired to the bottom of their nest. The amazon ants now ascended the hillock, collected in crowds on the summit, and took possession of the principal avenues, leaving some of their companions to work an opening in the side of the ant-hill with their teeth. Success crowned their enterprise, and by the newly-made breach the remainder of the army entered. Their sojourn was, however, of short duration, for in three or four minutes they returned by the same apertures which gave them entrance, each bearing off in its mouth a larva or a pupa; they retraced the route by which they had arrived, and proceeded one after another, without order or regularity. The whole army might be readily distinguished in the grass by the contrast afforded by the amazon ants and the white eggs and pupæ they had captured. They repassed the hedge and the road, in the place they had previously crossed it, and then directed their course through a field of ripened corn, where I experienced the regret of not being able to follow them.

"I now retraced my steps towards the scene of the recent assault, and there found a small number of negro labourers, perched upon the stalks of plants, holding in their mouths the few larvæ they had rescued from pillage; these they shortly carried back to their former station.

This feature, so prominent in the history of this ant, of whose name I was ignorant, induced me to give them the appellation of amazon or legionary ants, as being most analogous to their martial character; which denomination I still retain.

I returned the following morning at the same hour, by the route I had observed the amazon army take, in the hope of acquiring some knowledge of the phenomenon of which I had been a witness, when I discovered the habitation of one of these martial hordes.

I observed on the right of the road a large ant-hill, covered with ants of that species. They formed into column, set forth in a body, and fell upon one of the habitations of the negro-ants, which, experiencing little or no opposition, they entered. One party immediately returned,

bearing in their pincers the purloined larvæ; another party, less fortunate, quitted the scene of attack, without reaping any advantage from their expedition: the former took the road to their own citadel; the latter marched in a body upon a second ant-hill, tenanted by the same species as the first, where they made ample booty. The whole army, now forming two divisions, hastened to the spot from which it had taken its departure. I reached the garrison a little before them; but what was my surprise to observe all around, a great number of that identical species they had gone forth to attack. I raised up a portion of the building, I still saw more; this induced me to regard it as one of the habitations that had already been pillaged by the amazons, when my suspicions were removed by the arrival of the amazon legion at the entrance, charged with the trophies of victory. Its return excited no alarm among the negro ants, who, whilst the legionaries were descending with their booty, so far from offering opposition, were even seen to approach these warriors, caress them with their antennæ, offer them nourishment, as is the custom with those of their own species, take up some of the larvæ, and carry them into the nest. The amazons remained within the rest of the day: the negro ants kept their station some time without, but retired before night.

"No enigma ever raised my curiosity so high as this singular discovery; and I had the satisfaction of finding near my own residence several ant-hills of the same kind, not a little astonished at being the first to notice their existence.

"Conscious of the great advantage of having them so near me, I determined to devote the whole of my time to them. As I was extremely impatient to ascertain the nature of the connexion between these different species, I opened one of their dwellings, and there observed a great number of rufescent mingled with ash-coloured ants, which gave me some general idea upon this head. The latter were busily engaged in re-establishing the several avenues, hollowing out galleries, and carrying below the exposed larvæ and pupæ. The amazons, on the contrary, passed over the larvæ, &c., with indifference, not once deigning to lift them, or take any part in the labours going forward; they wandered for some time over the surface, and then retired to the bottom of their citadel.

"But at five in the evening, the scene undergoes a complete and almost immediate change; the amazons leave their retreat, become restless, and assemble on the outside. They are all in motion; none, however, move but in a curved line, and in such a way, as quickly to

return to the outer wall of their garrison; their number increases each moment, they describe greater circles, a signal is communicated, they pass from one to the other, striking as they proceed with their antennæ and forehead the breast of their companions; these, in their turn, approach those advancing, and communicate the same signal, it is that of departure; the result satisfactorily proves it. We see those receiving the intimation put themselves at the moment in march and join the rest of the troop. The column becomes organised, advances in a straight line, passes over the turf, and removes to a considerable distance. Not a single amazon is any longer to be seen near the garrison. The advanced guard sometimes halts until the rear guard comes up, and then diverges to the right and left without advancing; the army forms anew, and again moves forward with rapidity. There is no commander-in-chief, every ant is in turn first, each seeking to be foremost; some, however, move in a different direction, pass from the front to the rear, then retrace their steps and follow the general movement. There are always a small number constantly returning to the rear, and it is probable in this way the movement of the whole army is governed.

"At a little more than thirty feet from their own residence they stop and explore the ground with their antennæ, much in the same way as dogs when searching for game. They soon find a subterranean negro ant-hill, to the bottom of which its inhabitants have retired. The amazon ants, unopposed, penetrate an open gallery; the whole army enter, seize upon the pupæ, and return through the several apertures, immediately taking the road to their garrison. It is now no longer an army disposed in column, it is an undisciplined horde. The amazons run after each other with rapidity, and the last comers from the stormed city are followed by some few of its inhabitants, who endeavour to wrest from them their prize; an effort in which it but rarely happens they are successful.

"I return to the garrison to be once more a witness of the reception given to these plunderers by the ash-coloured ants, with whom they dwell. I observe a considerable number of pupæ heaped up before the door; each amazon, on its arrival, deposits its burthen, and then returns to the invaded ant-hill;—their auxiliaries suspend their labours in masonry, and come forward to the pupæ, which they carry one by one into the interior. The negroes are also frequently seen to unload the amazons, after having amicably touched them with their antennæ, when the latter yield to them, without opposition, the pupæ they have purloined.

"Let us still follow this army of plunderers on their second return to the attack of the nearly ruined ant-hill. Its inhabitants, however, have had time to recover themselves, and to station a strong guard at each of the entrances. The amazons, who are in small numbers at first, take flight as soon as they perceive the negroes in a state of defence; they return to the main body of the army, and advance and retreat several times successively, until they are in sufficient force; they then throw themselves, en masse, upon one of the galleries, driving away and putting in confusion its inhabitants. The whole army now enter the subterranean city, and seize upon the larvæ, which they carry off in great numbers, and in great haste. They never take any of the parent ants prisoners, their sole object being the possession of their offspring. Upon their return to the garrison the most friendly reception is still given to the amazons, who,—their associates having arranged the produce of their first harvest,—either deposit their load at the entrance, or consign it to those in attendance, who hasten to place it in the interior.

"Could one for a moment suppose that these intrepid warriors would return a third time to the pillage? This time, however, they had to undertake a siege in regular form, for the individuals from whom they had twice successively taken larvæ and pupæ, had lost no time in throwing up trenches, barricading the several entrances, and reinforcing the guard of the interior, as if fully aware of this third attack from their adversaries. They had, moreover, brought all the little pieces of wood and earth within reach, with which they had blocked up the passage to their habitation, in which they were posted in force. The legionaries at first hesitated to approach, but rambled about or returned to the rear until sufficiently reinforced; they then, upon a given signal, rushed forward en masse with great impetuosity, and began removing with their teeth and feet the many obstacles that opposed their progress. Having succeeded, they entered the ant-hill by hundreds, notwithstanding the resistance of its inhabitants, and carried off their prize to their garrison. But this time, in lieu of remitting to their associates their plunder, they carried it into the under-ground chambers themselves, where they remained the rest of the day.

"On the 23rd June, at half-past three, when the sun was extremely powerful, a few of the amazons quitted their abode, and after taking a survey of the environs, re-entered; a moment after, others, but in trifling number, came to take the air at the entrance of one of the galleries, where they seemed to await the favourable moment for com-

mencing their expedition. At a quarter before five they sallied forth in crowds, and appeared extremely restless; some advanced into the meadow, whilst others remained on the ant-hill; but a few, returning to the rear, by the effect of that tactic we have elsewhere noticed, arrived at the garrison and gave the signal for departure, by approaching in turn, and striking with their antennæ all their compatriots, who immediately put themselves in march to join the army. This warlike phalanx took a direction different from that of the preceding evening, but soon stopped in their course, and separated in search of some ant-hill; but experiencing no success, they again formed and continued their march, until they alighted upon one hidden in the grass, at about fifty paces from their own dwelling. The ash-coloured ants, frightened at the unexpected arrival and number of the amazons, took flight, leaving the latter to make ample booty of larvæ and pupæ, which they carried off to their own abode.

"Another army, infinitely more numerous than the first, now issued from the garrison, and took a different direction in their march, which was somewhat tedious; they passed untouched several ant-hills inhabited by a different species, but finding at length a nest of ash-coloured ants, they attacked it with their usual fury, and returned laden with pupæ and larvæ. I was a witness every day during the summer to these invasions."

Another species of slave-making ants (*Formica sanguinaria*, Latreille), whose proceedings are somewhat different, will be detailed in a subsequent page.

NOTES UPON INSECTS.

BY SYLVANUS.

It is a trite but no less true remark, that the structure of every creature is fitted for the life it is designed to lead: however minute, or however vast the size of the animal, this equally applies in all instances throughout the creation. The more familiar the illustration which we select of this great law, the more forcibly are we impressed with a sense of the mightiness of the Creator. We will choose from out the varied host of insects, two for examination and comparison—which every reader, however young, must have observed, viz. the beetle and the

butterfly. The first (which belongs to the order *Coleoptera* *) has every part of its body formed for strength, and in the most of instances is well supplied with the organs both of offence and defence†. The first pair of wings form an effectual protection to the under pair, and likewise to the abdomen. By some authors they have been denominated the "wing sheaths," but they are more properly wings, although they "are so horny and stiff, that they have no close resemblance to what are called wings in other insects ‡." The use which the work just quoted assigns to these first pair of wings is, "to cover the second pair in a state of repose, and to balance the body, perhaps by their weight, in flying." These reasons I consider perfectly satisfactory; but there is one point left which deserves mention: I allude to the humming noise which some beetles make in their flight, attributable to the rapid displacement of the opposing particles of the atmosphere, produced by the quick passage of the insect through it. Your intelligent correspondent Solitarius, at page 406 of the first volume, speaking of the gnat (*Culex pipiens*), says he conceives it possible, that "it may learn its situation in a dark room by the variations produced upon its piping noise, (which may thus be as serviceable to it in the dark, as its sight in the day time,) to avoid breaking its wings, &c." He also conjectures that "the humming of the cockchafer (*M. vulgaris*), the dung beetle (*G. stercorarius*), and many other insects," may be referable to the same cause. With all due deference to the ingenious observations of this gentleman, I would humbly remark, that the latter conjecture does not appear to be borne out by facts. How is it, it may be asked, has the proverb "as blind as a beetle," arisen, but from the well-known stupid tendency of beetles to fly direct against any obstacle which may occur in their course, by which many of those kinds which fly about in the dusk of the evening are stunned and captured. Besides, —the rapidity of their flight would not give them much time to employ the instinct for which Solitarius gives them credit. The question is very interesting, and to the lover of Entomology, is very important. Experiments might be made which would throw some light on this subject. In the next number (if deemed worthy of insertion) I shall resume these notes.

Camberwell, February 26th, 1834.

---

* Derived from the Greek κολεος, *a sheath*, and πτερον, *a wing*.—S.

† For instance, the large forceps of the *L. Cervus*.

‡ Alphab. Ins. page 54.

THE EDITOR'S ALPHABET OF INSECTS*.

THE first edition of the "ALPHABET OF INSECTS," though more comprehensive than any other elementary work in English, did not contain several particulars, which were omitted for fear of swelling the size and increasing the price of the book. Many of these omissions have been supplied in the present edition, in consequence of the proprietors finding that the extensive demand would remunerate them for the additional expense; and on the same principle, a number of new engravings have been introduced, chiefly from the splendid work of M. Straus Durckheim on the Anatomy of the Cockchafer, published at the expense of the French Institute. As many of our readers who possess the first edition may not meet with this, and may not be aware of the important additions, we shall here give an extract, as a specimen of a work which we sanguinely hope will be of no inconsiderable use to those who are beginning the study, as well as serve to show those who are advanced what is doing by our neighbours on the Continent.

"FOOT-COMBS AND FOOT-BRUSHES OF INSECTS.—Most people may have remarked, that flies are ever and anon brushing their feet upon one another to rub off the dirt, and equally assiduous in cleaning their eyes, head, and corselet with their fore legs, while they brush their wings with their hind legs. In the foot of the common blow-fly there are two rounded combs, the inner surface of which is covered with down, forming a fine brush; and some crane flies have three such combs on each foot. Mr. Blackwall denies that what are here termed combs exist, as they are represented by Bauer, on the edge of the membrane of the flies' foot, and says, the appearance of this is caused by minute short hairs. But though I should be more disposed to trust so celebrated a microscopical observer as Bauer, yet it is of little moment to the office of a comb, which I have here ascribed to the foot, whether it is hairs or serratures. I have also observed the water measurer clean its feet, though not by crossing them like the fly, but merely by wiping them upon one another.

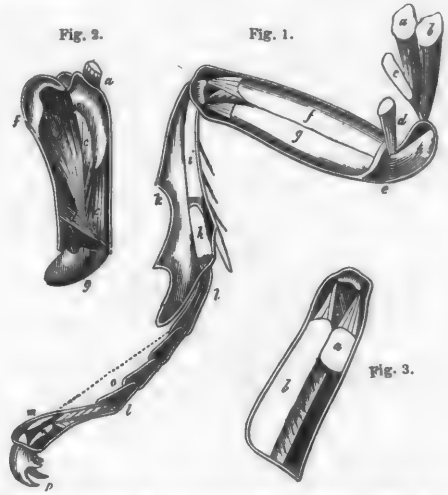
"In the case of the large green locust†, the structure of the instrument is more obvious; and it being important to keep the soles of its feet

* Alphabet of Insects, for the use of Beginners. 2d edition, revised, with numerous additions. London, 1834.

† In Latin, *Acrida viridissima*.

clean, to enable it to walk up glass or other smooth substances, it is not contented, like the fly, with brushing them one on another, but will, like a spider, as first recorded by me, go over the foot with its jaws, mumbling off every bit of dust, a process which Swammerdam mistook for chewing the cud.

"MUSCLES OF THE LEGS AND FEET.—Beginning with the haunch, Straus-Durckheim describes in the cockchafer four flexor muscles in the fore leg, three in the mid leg, and five in the hind leg, without mentioning two others attached to the latter, which he supposes rather to be pertractors of the abdomen. Opposed to these are the extensor muscles of the haunch, one strong one in the fore leg; a short one and a long one in the mid leg; and three in the hind leg. Besides these, there are a flexor and an extensor to that which I have called the third piece of the haunch.



"Muscles of the right fore leg and foot in the cockchafer magnified eight times. Fig. 1, *a*, *b*, *c*, extensor muscles of the trochanter cut across; *d*, flexor also cut; *e*, the trochanter; *f*, extensor of the leg; *g*, flexor of the leg; *h*, extensor of the foot; *i*, *l*, *l*, the flexor of the foot, the tendon being the long white line in the centre; *k*, the leg; *m*, extensor of the claws; *n*, the flexor of the claws; *o*, the foot; *p*, the claws. Fig. 2. Haunch of the same laid open; *a*, the third flexor muscle; *b*, *c*, *d*, extensors of the trochanter; *e*, the flexor of the trochanter; *f*, the rotula; *g*, the trochanter. Fig. 3. Thigh of the same; *a*, portion of the extensor of the leg; *b*, *c*, the two side parts of the flexor.

"The thigh, in each of the three pairs of legs, has only a very feeble

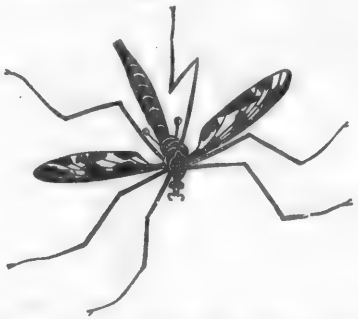
abductor muscle, and as it is but very slightly movable, there is no antagonist abductor.

" The shank has a strong flexor muscle, and a more feeble extensor in each of the three pairs of legs.

" The foot, in each of the three pairs of legs, has an extensor and a flexor in each of the joints. The last joint includes a flexor and extensor for moving the claws.

" STANDING * OF INSECTS.—The centre of the pressure † in insects being usually either in the base of the abdomen or in the hind corselet, the three pairs of legs are of course inserted in advance of it; and hence, did they stand perpendicular to the body like the legs of quadrupeds, it would be impossible for an insect to alight on its legs without being upset.

" To obviate this, the legs extend to a considerable length from the body, and not only so, but the first pair project obliquely forward, and the third pair obliquely backward, while the second pair are, in some species nearly at right angles to the body, and in other species, project obliquely forward or obliquely backward, according as the position of the centre of pressure requires for the stability of the animal. In two-winged flies, for example, the mid pair of legs projects obliquely forwards, as may be seen in the figure.



" Figure of a Crane Fly‡ to show the position of the feet, as extending the base within which falls the line of direction of the centre of pressure.

" The singular pendulum-like motion, exhibited by some species of long-legged flies while their feet are quite stationary, may be referred

* In Latin, *Statio*.

† See Alphabet of Physics, p. 38.

‡ In Latin, *Tipula oleracea*.

perhaps to the same cause as the similar motions of caged animals in a menagerie. When they are observed to perk up their hind legs in the air while they are standing on their fore legs—a common practice among gnats—it is probably to ascertain, from the agitations of the air, the approach of danger, as they are extremely timid."

CHAPTER OF VARIETIES.

OF WHAT USE ARE THE AIGRETTES OF CERTAIN OWLS?—Whilst minutely examining a specimen of the little horned or scops owl* (*Scops Aldrovandi*, Ray), in my collection, I observed that the feathers which form the aigrettes or tufts upon the head were much rubbed and worn. This would seem to imply that these hitherto considered ornamental tufts are of some decided use to the bird,—but what that use can be, I cannot imagine. These feathers do not appear in the least worn, in the specimens which I possess of the two British species of *Otus*.

E. BLYTH.

Tooting, Feb. 4th, 1834.

HABITS OF THE TAWNY WOOD-OWL, OR SCREECH-OWL (*Ulula stridula*, Selby; *Strix Aluco* of Linnæus).—An owl of this species, which, with its wing cut, enjoys the range of a large garden in this neighbourhood, is in the constant habit of burying whatever food it cannot eat; scratching up the earth with its feet, and covering up its treasure as carefully as any fox: it does not, however, like that animal, suffer it to remain until it becomes putrid, but returns and scrapes it up again, generally in the course of a few hours. It frequently rests itself sitting, like the African serpent-eater, the cassowary, and various *Grallatores*, upon the whole length of the *tarsus*, selecting generally an angle of the garden wall away from the sun, against which awkward place it has rubbed and much injured the appearance of its tail; this circumstance led me to suppose at first that the habit was not common to the species, as the tails of the wild birds are always perfect; but probably in a state of nature they contrive to fix upon situations where no injury to their plumage can take place.

E. BLYTH.

Tooting, Surrey, Feb. 4th, 1834.

* Shot in Kent.

WINTER BIRDS.—In the last number of the "Field Naturalist," I mentioned having seen sparrows carrying off feathers during frost, and now beg to state a still more curious instance of unseasonable nestling, which has just come to my knowledge.

A gentleman residing in this city, so early as a fortnight after Christmas, found at East Cliffe, in East Lothian, the nest of a hedge chanter (*Accentor modularis*, Cuvier) with one egg in it, which he blew and ascertained to be fresh. My authority is most respectable, and, were I at liberty to give his name, would I am sure not be doubted.

During a sudden fall of snow about ten days ago, I observed that all the house sparrows in the neighbourhood retired for shelter to the crevices of an old brick building; and it was very amusing to see them peeping out every little while to ascertain if the storm was over. As it is in the direction of this building that I have generally observed them to fly with feathers and other materials, it seems probable that the suggestion of the Editor, as to their constructing roosting nests, is correct.

T. M. G.

Edinburgh, February 21, 1834.

MODE OF CATCHING SMALL BIRDS.—As the spring is now coming on, and a great deal of interest has been excited with regard to our summer warblers since the publication of Mr. Sweet, I wish to make known to you a mode of catching them, which I have partially tried myself with success. I procured a slender wand of about 18 inches in length, and hung from it at different distances a number of nooses formed of single horsehairs. I bored a hole in a tree, where I thought it likely for birds to fly past, and inserted the wand into it, so as to present the appearance of a natural branch, with the nooses hanging some distance below. It was merely an experiment, for I could catch nothing but the common brown wrens by the method recommended by Mr. Sweet, and I was fortunate enough to capture first the lesser whitethroat, which is a bird not very often seen from its habits of concealment; it took a fly from the hand the first day, and it learnt to eat bread and milk immediately; by throwing some flies into it I kept it in perfect health for some time, until it eventually escaped. I afterwards set nooses in other places, and caught a good many other commoner birds, especially on some rails covered with thorns which crossed a brook, and were much frequented by birds for the purposes of bathing. I caught even so large birds as blackbirds and thrushes with single hairs, but they got entangled in more than one noose, so that I cannot say whether one hair alone

would hold them. I believe I also captured a specimen of the bird described as having an appearance and size between the nightingale and common white-throat, but it died the next day. It was in the autumn that I used these nooses, and without any bait, but I have no doubt in building time the hair would itself be a bait; and birds do not seem to have the least fear of it. The nooses might be used like a net in an open part of a hedgerow, and the birds driven into them. I have no doubt the sedge bird might be very easily caught by driving him up and down a drain, and having a number of nooses suspended from a string across; and also those warblers which frequent furze, as the Dartford warbler, furze chit, &c. might possibly be taken. I am very little of an entomologist, and I therefore should like to elicit from some of your correspondents this coming summer, a mode of breeding particular sorts of insects, in addition to the common meal worm, for the feeding of summer birds. C. W. S.

Stepney.

HABITS OF SWALLOWS PREVIOUS TO MIGRATION.—For several years past I have observed, that after the swallows have reared their young, and they are become strong on the wing, they assemble in vast quantities on the roofs of the highest houses, from which they fly off at a given signal made by some of the flock (no doubt by the old birds, which may be thus expressed, *twit, twit, twit,* repeated several times in succession), and perform their various evolutions in the air. After being absent a short time they return again: this practice is kept up for several days: after which they may be seen sporting in the fields, and *frequently alighting* on trees and bushes. A day or two previous to their departure they assemble in a large flock, and at night roost on the willows and trees in an adjoining marsh, near the sea-shore, at a short distance from the town. I have observed them in this place of an evening, in the beginning of October, and the day after there was not more than two or three to be seen; so that I concluded they must have migrated in the night, or very early the next morning, as I was on the spot shortly after daybreak.

After having made the above observations four years since, I saw, on a fine day in the depth of winter, a solitary swallow (*H. rustica*) skimming the surface of a pond. The weather for some time before had been very cold. This bird must have remained in a state of torpidity for several weeks previous to the time I saw it.

Penzance, Cornwall, Feb. 5, 1834.

OAKS GROWN IN HYACINTH GLASSES.—An occurrence has lately taken my attention, which is possibly not unworthy of notice, as illustrative of the efforts made by natural productions to discharge their functions in some other way, if interrupted in the ordinary way of discharging them. The case was one of the rearing of an oak plant in a hyacinth glass, according to the mode described in your first volume, p. 177. The acorn having been suspended on a thread fastened round it, as there described, in due time the germ burst the shell and made its appearance at the smaller end; but in thereupon proceeding downwards, the radicle was intercepted by the lower part of the shell, which was not open enough to allow it to pass free. The radicle was accordingly bent upwards; when penetrating along the length of the acorn horizontally, within the shell and of course within the thread which surrounded the shell, it made its way out at the *larger end;* and thence passed down at a right angle into the water, where it is now luxuriating several inches deep, and with every prospect of the plumula shortly shooting upwards, and becoming a tree in proper season.

RURICOLA.

Holywood, Feb. 12th, 1834.

DR. KNOX ON THE STRUCTURE OF THE FOOT OF THE HORSE*.—He demonstrated the navicular bone of the horse's foot not to be a sesamoid bone, nor a peculiar structure formed expressly for the horse, but the *Epiphysis* of the *Os pedis*, or coffin-bone. This was proved satisfactorily by a direct appeal to structure. Besides anticipating results of practical consequence from this discovery, the author is led to observe, that an organ may be displaced and employed to perform different functions in different animals,—that the epiphyses of bones are intended by nature to form separate bones in a vast variety of animals,—and that they may often lead to the discovery of the type of the skeleton in fossil remains of extinct animals.

DAILY FLIGHT OF ROOKS (*C. frugilegus*).—It is a daily habit with the rooks belonging to the rookeries situated several miles to the eastward of this town, from the end of one breeding season to the commencement of the next, to fly to the west. I have often observed them on Sennen Green, near the Land's End, at which place and in the neighbouring fields they remain all day, seeking food, accompanied by jackdaws

* Read before the Royal Society of Edinburgh.

and gulls; the former appear to be very sociable at this time of the year, but the latter often have desperate battles with them, the rooks generally coming off victorious. About an hour or two before dark the rooks assemble together, mount in the air, and wing their way to their respective homes.

I may also state that, when the weather is fine, they may be seen in the morning, flying at a great height over the town (*from east to west*). If it happens to be blowing strong, they fly very low; and I have frequently observed them, when they have not been able to get forward, to remain in the fields near the town. When this is the case, they return earlier than usual. E. P.

Penzance, Cornwall.

OBSERVATIONS* ON THE WILLOW WREN (*S. trochilus*), AND OTHER BIRDS.—This bird is a regular summer visitant in this part, but some of them remain with us all the year. A few days since I saw one climbing the branch of an elm, seeking for food in the interstices of the bark. I was also shown one, about the middle of last month, by a gardener, which was caught the evening before by his son: and one evening in January, 1833, whilst out catching birds for specimens, I observed two willow wrens comfortably perched, side by side, on a small twig in the thickest part of a strawberry tree, one of which I captured; it lived several days, and ate freely of boiled egg, chopped fine. This bird is seldom seen in the summer, on account of its shyness.

The loon and dunlin visit us regularly in the autumn, and remain till spring; also the crested shag, northern diver, and golden plover, when the winter is severe. E. P.

Penzance, Feb. 5.

THE STARLING.—On the morning of the 25th of February (1834), I observed several starlings flitting amongst the trees in Lincoln's Inn Gardens, amidst the smoke and din of London.

The gardener informed me that there had been a nest of these birds in the gardens. Is it, or not, an unusual place for this species of bird? Probably they were the progeny of some tame birds which had escaped from confinement.

---

* Omitted in my last communication of migratory birds in this neighbourhood; a list of which see p. 109 of this volume. E. P.

They first attracted my attention, as they flew from tree to tree, pursued by sparrows, who seemed to deem them intruders on their long-possessed domain. In your edition of *Montagu's Dictionary*, it is stated that the natural notes of this bird are a *shrill whistle*, and a chattering noise. The latter remark appears correct, but I do not concur in the expression *shrill whistle*. I would rather say, a *melancholy or plaintive whistle*. In the same work, it is said, in confinement it is very docile, and is *taught to imitate* the human voice, and to whistle tunes. But it has great natural powers of imitation, according to *Mr. Lowe*, in his work on the *Orkneys*. "I have," says that author, "often been much diverted to hear a couple of cock *stares*, perched upon two opposite chimneys, trying to excel one another in imitating all the noises below—the crowing of cocks, cackle of hens, barking of dogs, mewing of cats, particular notes of different wild birds; all this intermixed with its own *natural harsh discordant squeak*."

Mr. Knapp terms their call "*a fine clear note*, that in particular states of the air may be heard at a considerable distance." I presume these naturalists are speaking of different notes; though *Knapp* afterwards speaks of their chattering "*in a low song-like note*."

These and such like discrepancies involve the subject of natural history in much difficulty. If you think any part of this letter fit to be published, you will probably, in a note, clear up the ambiguity.

Yours, &c. J. B. (B. V. B. V.)

On cats.—As you have occasionally given us some observations on the domestic cat, and as you solicit even the slightest information upon any thing relating to Natural History, I am induced to trouble you with the following particulars as to a cat of the large black and white kind now in my possession, which, though (I believe) more than twelve years of age, is in good condition and as lively and playful as a kitten.

My object principally is, to correct two errors which some naturalists have fallen into; namely, that the cat seldom or never lives beyond the age of ten years, and that it is always attached to the *house* and not to the *person* of its owner.

Being at lodgings in London in 1824 and 1825, the cat above alluded to, which then belonged to the people of the house, attached itself in a particular manner to my wife and me, so much so that it was never contented but in our apartments; and when we happened to be absent for a short time, it was quite disconsolate, though, till this feel-

ing had been first evinced, we had taken no particular notice of it. The cat (which is a female) had a kitten with her nearly half grown when we were about to leave London for the country, in September 1825, and my wife wishing to take the kitten with her, I proposed to take the mother also; and they were accordingly put together into a basket, and accompanied us on our journey. The unconscious kitten was full of play, even in this state of confinement, to the no small annoyance of its mother, who seemed to be gravely contemplating on weightier matters, perhaps connected with the change occasioned by her unexpected trip. We travelled in a circuitous route upwards of 140 miles, occasionally stopping for one, two, and three days, at different places, till at last the cats were apparently quite reconciled to their new mode of life. When the basket was opened at the places we visited, the mother would at first, for a moment, look wildly and suspiciously around her; but when she found her friends standing by and speaking kindly to her, she immediately resumed her confidence and composure, and would walk about contentedly whilst we were in view, till called again to her basket, which she would enter without the least reluctance, evidently showing that she was really attached to our persons, and not to any place in particular, and was perfectly satisfied whilst she knew we were near her. We left her at a friend's house in the country, upwards of twenty miles from this place, for more than a year, and ultimately, when we came to settle here, took her home with us, she never having appeared to forget, but always recognised us when she saw us, and stayed contented where we were without any apparent inclination to leave us or return to her former habitation; and this has likewise since been the case when we have occasionally changed our residence in this town. I have no doubt that want of kindness and attention very often prevents personal attachment in these animals, and is many times the destruction as well of them as of our own species, and it is certainly very inexcusable and cruel to neglect or ill-treat the brute creation placed under our care.—"A good man is merciful to his beast," and he or she who is not so is not a friend to humanity, nor fit to have the management of children.

De Ville, the Professor of Phrenology, in the Strand, extends his observations to other animals, as well as to man; and in a course of lectures he delivered here a short time since, he remarked upon the generally received opinion that cats were attached to the house, and not to the person, stating that there were exceptions to the rule, and that where this was the case, the animal would be found to possess a more

than usual rotundity of head, which, I must acknowledge, in justice to Phrenology as a science, I think is so far sufficiently exemplified in my cat.

P. S. Two or three of the *Musca domestica*, or common house fly, made their appearance again in February, the last of the winter stock having disappeared only on the 16th of January; so that owing to the mildness of the winter we have not been deprived of their company more than five or six weeks. On the evening of the 1st of March instant, I saw a bat on the wing. The fruit trees are showing their blossoms, and the willows are covered with catkins or male flowers.

Southampton, March 3, 1834. M.

LADY-BIRDS.—In the spring of 1830, having accidentally walked to some sand hills (cliffs) in the neighbourhood which are covered with that kind of grass, provincially called Marram, I was much surprised to find that the whole surface of the ground appeared to be covered with ladybirds (*Coccinella*) of various kinds.

In the space of an hour or two I collected as many as fifty-two kinds, distinctly different from one another; five of these were larger than the common ladybird (*Septem punctata*), but in general they were of a very small size.

On returning the next day to the same spot, I could scarcely find a single individual, which I attributed to a strong wind which had blown from the shore all night; and on descending to the beach I found that my conjecture was true, as multitudes of ladybirds, left by the receding tide on the shore, were dead.

As I took no note of the circumstance at the time, I cannot exactly say in what month this happened, but I think it was in May.

I should be much gratified if any of your readers are able to assign any cause for the collection of so many different species of Coccinella in such a situation. C. B.

January 23*rd*, 1834.